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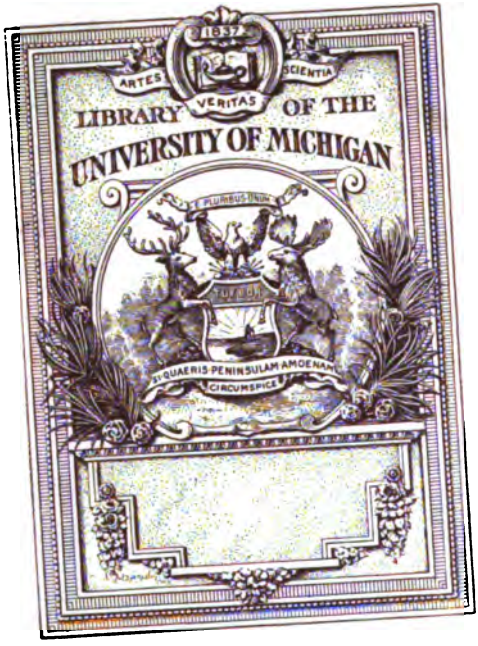

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TRANSACTIONS

OF THE

WISCONSIN

STATE AGRICULTURAL SOCIETY,

WITH AN ABSTRACT OF THE

RETURNS OF COUNTY SOCIETIES

AND KINDRED ASSOCIATIONS,

TOGETHER WITH

REPORTS ON THE INDUSTRY OF COUNTIES.

VOL. VI.—1860.

EDITED BY J. W. HOYT, SECRETARY.

MADISON, WIS.:
SMITH & CULLATON, STATE PRINTERS, ARGUS OFFICE.
1861.

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PREFACE.

After much delay, entirely unavoidable on our part, we are at length enabled to issue the Sixth Volume of the Transactions of the Wisconsin State Agricultural Society.

A glance at the Table of Contents will show, that although it does not differ in its general objects from the volumes heretofore published, it has, however, at the same time, a special object, to wit: the better information of our own people as well as the citizens of other States and of foreign countries upon the subject of our industrial capacity, condition and progress as a State.

To this end great pains have been taken to collect the important facts embodied in the Report of the Executive Committee and to insure the greatest possible accuracy in their statement. If, therefore, injustice has been done in that Report to any portion of the State, or to any of its diverse industrial interests, it should be attributed solely to the lack of the means of correct information, which at this early date in the history and progress of the commonwealth, could hardly be expected to be, in all respects, full and complete. It is nevertheless believed that, while the exhibit therein made is eminently creditable to the State, whether considered as to its wealth of

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resources or its industrial enterprise, it is likewise, in all important regards, worthy of the public confidence, as a scientific, historic and practical record.

The Map included in this volum ewas prepared by the author for the express purpose of illustrating the Report. It presents, at a glance, the results of extensive personal observation and investigation in nearly all portions of the State, the communicated results of the observations of reliable persons resident in many of the localities illustrated, and of numerous scientific gentlemen who have, at various periods, been directly or indirectly engaged in geological surveys of Wisconsin. Messrs. I. A. Lapham and T. J. Hale and Professors Jas. Hall, E. Daniels and J. D. Whitney, are especially entitled to our acknowledgments. In the location of the meteorological lines, we have relied chiefly upon the authority of the Army Meteorological Register, of the observations more recently taken by citizens of the State under the direction of the Smithsonian Institute, and of the valuable works of Dr. Forry and Lorin Blodgett on the Climate of the United States.

The series of papers on the Industry of Counties are in harmony with the plan of the general Report and will be found to contain matter of much local interest and importance. It is a source of regret that all the counties are not therein represented; but inasmuch as vigorous effort was made, both by private correspondence and public notices, to secure such reports from every county in the State, the non-appearance in this volume of the several counties not so reported is entirely chargeable to their own neglect. It fortunately happens, however, that the portions of the State which are represented, are so widely and well distributed that, taken together, they may be regarded as fairly representative of the whole State.

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The tabular abstract of the returns of County Agricultural Societies presents, in a condensed form, the more important facts connected with each. The scope of the entire work and its limitations as to space forbade the publication of a fuller abstract, in accordance with the usage in previous volumes.

Under the head of Essays, Addresses, Communications, &c., the amount of matter is necessarily less than was at first intended. It is believed, however, that the papers of this class are especially valuable, and that they will commend themselves to all readers interested in the subjects of which they severally treat.

Mr. Hale's "Additions to the Flora of Wisconsin," commenced in the fifth and designed to be continued in successive volumes of the Transactions, are possessed of a high scientific value and reflect much credit upon their enterprising and industrious author.

The Report of the Fruit Growers' Association, being an important collection of carefully formed opinions and the sifted results of years of practical experience, will undoubtedly receive that careful consideration to which it is so justly entitled.

Should there prove to be a considerable number of unimportant typographical errors in this volume, we ask the reader, and especially the authors of the several papers in which they may be found, to bear in mind, that the irregularity of the work of printing, together with the serious illness of the Editor, while portions of the work were going through the press, have rendered impracticable that careful inspection of proof, in all cases, which it would otherwise have received.

J. W. HOYT.

STATE AGRICULTURAL ROOMS, February, 1862.

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1860.

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Learned, J. M., Janesville.
Lockwood, John, Milwaukee.
Ludington, H. Milwaukee.
Lynde, W. P., Milwaukee.
*Macy, J. B., Fond du Lac.
Marshall, Saml., Madison.
Martin, C. L., Janesville.
Maxson, O. T., Prescott.
Mills, Simeon, Madison.
Miltimore, Ira, Janesville.
Mitchell, Alex., Milwaukee.
McBride, Alex., Madison.
McCarty, F. D., Fond du Lac.
Morse, D. S., Milwaukee.
Morse, Saml., Milwaukee.
Needham, J. P., Wauwatosa.
Newcomb, S. B. Cold Spring.
Olney, C. W., Madison.
Paddock, Geo., Milwaukee.
Palmer, H. L., Milwaukee.
Peffer, G. P., Pewaukee.
Pinckney, B., Fond du Lac.
Plumb, T. D., Madison.
Porter, Wm. F., Madison.
Porter, Wm. H., Madison.
Power, D. G., Milwaukee.
Powers, D. J., Madison.
Prest. St. Peter's Valley Farmer's Club, Springfield, Dane County.
Proudfit, Andrew, Madison.
Reed, Harrison, Madison.

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Reed, Herbert, Madison.
Reynolds, Thos., Madison.
Resague, A. C., Janesville.
Richards, Richard, Racine.
Richardson, D., Middleton.
Richardson, Jas., Madison.
Robbins, J. V., Madison.
Roddis, T. R., Milwaukee.
Roc, J. P., Franklin.
Rogers, J. H., Milwaukee.
Rogers, J. S., Burlington.
Rowe, W. E., Mazo Manie.
Rowley, N. C., Verona.
Ruble, Simon, Beloit.
Ruggles, J. D., Madison.
Sage, E. C., New Lisbon.
Sexton, L., Milwaukee.
Scott, S. B., Milwaukee.
Seville, Jas., Milwaukee.
Shepherd, C., Milwaukee.
Shipman, S. V., Madison.
Sinclair, Jeff., Milwaukee.
Slaughter, G. H., Middleton.
Smith, Geo. B., Madison.
Smith, J. B., Milwaukee.
Spaulding, Wm., Janesville.
Spaulding, Jos., Janesville.
Stilson, Eli, Oshkosh.
Taylor, W. R., Cottage Grove.
Tenney, H. A., Madison.
*Thomas, M. J., Fond du Lac.
Todd, J. G., Janesville.
Throop, B., Milwaukee.
Townley, John, Moundville.
Van Slyke, N. B., Madison.
Vilas, L. B., Madison.
Webster, Martin, Fox Lake.
*Weed, Chas., Madison.
West, S. C., Milwaukee.
*White, W. A., Madison.
Whittlesey, T. T., Pheas't B'ch.
Wilcox, C. T., Janesville.
Willard, J. F., Janesville.
Williams, D., Springfield.
Williams, C. H., Baraboo.
Williams, G. M., Whitewater.
Wilson, H. O., Milwaukee.
Wolcott, E. B., Milwaukee.

* Deceased.

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REPORT OF THE EXECUTIVE COMMITTEE.

To His Excellency, ALEXANDER W. RANDALL,

Governor of the State of Wisconsin:

SIR:—By an interesting coincidence, this, the tenth year of the organization of the State Agricultural Society, at the same time terminates the first full calendar decade of our history as a State, and a most important and memorable decade in the history of the Republic.

The Executive Committee have thought it proper, therefore, that the Report herewith presented should embrace, in addition to the usual proceediags of the Society and other matter required by law, a concise review of the natural resources of the State, and of the industrial operations within that period, together with a general statement of its present industrial condition and wants.

Reviews and reckonings of this sort are as important to the State as are the ordinary daily and annual posting of accounts to the individual merchant or farmer. It is a source of regret to the Committee, however, that notwithstanding the most vigorous and persistent efforts have been used to secure full and reliable data, they are compelled, after all, to make a report which can justly claim to be nothing more than a partial showing of what it ought to present in completeness. It is hoped that at no distant day the Society, with the aid of the State, will be able to commence and carry forward a systematic agricultural survey of the State, which will provide full information on those important points in which our present knowledge is necessarily deficient. It is also hoped that measures will be

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taken, at an early day, to insure a more thorough collection of statistics calculated to illustrate the condition and progress of our industry in all its departments. This is a matter that cannot longer be neglected without serious detriment to the public interests.

NATURAL RESOURCES OF WISCONSIN.

A proper discussion of the natural resources of a State involves a consideration of its geographical position and climate, the character of its geological formations, mineral deposits and soils, and of its natural products generally, whether mineral, vegetable or animal. It will be apparent that a subject so vast in extent, and so comprehensive, can only be treated in a very concise and general way within the limits of this Report.

GEOGRAPHICAL OUTLINE.

Geographically considered, Wisconsin is one of the most highly favored of the States. Her northern and eastern borders are washed by great lakes, which connect directly with the Atlantic seaboard, and offer to her the commerce of the East and of the Old World; the greatest of rivers forms her western boundary, and opens to her the inter-state trade of the South, the trade of the Indies, and of all foreign countries more naturally accessible through the Gulf; while numerous navigable streams water her fertile lands, and connect the more central portions of the State with those great natural highways of transportation and travel. The entire area of the State is fifty-four thousand square miles, exclusive of Lakes Superior and Michigan.

The surface is marked by no elevations which can, with propriety, be called mountainous, though the elevation of a large central area is considerably over a thousand feet above the level of the sea. Lake Michigan is 578, Lake Superior 627 feet above the ocean level; while the Mississippi at Prairie du Chien and at the mouth of the St. Croix, is 25 and 50 feet higher than these lakes, respectively. The greatest elevation consists of what is known as the Penokie Iron Range—a de-

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clining continuation of the Porcupine Mountains of Northwestern Michigan—the highest summits of which are about twelve hundred feet above Lake Superior, or eighteen hundred feet above the ocean level. This hight is attained at a distance of only a few miles from the shore of the lake, giving the streams which flow northward a very rapid descent. On the southern side, however, the general descent is gradual, with a secondary slope, eastward and westward, down which flow the principal rivers of the State, emptying into the lake and the Mississippi. The elevation of that portion which constitutes Southern Wisconsin, is only about two hundred feet above the level of Lake Michigan. Making no allowance for inequalities of surface, the face of the State, therefore, presents the form of a huge tortoise shell, elevated at the northern extremity, so as to slope southward—the great northern and southern axis or dividing ridge coinciding in direction very nearly with the Fourth Principal Meridian.

The principal rivers are the Wisconsin, the Chippewa and the Wolf (improperly called Fox). There are also many other rivers of considerable magnitude—some of them, as the Rock, navigable for small boats in time of high water. All the larger streams have their origin in the elevated plateau above referred to as occupying the northern and central portions of the State, and which is marked on the accompanying map as "The region of Lakes and Marshes." Many of the streams are precipitated over rocky descents and occasional precipices, forming most beautiful rapids and cascades.

Besides the great inland border seas, Superior and Michigan, the largest in the world, Wisconsin abounds in lakes of smaller size, profusely scattered over the entire surface. They vary in extent from one to thirty miles, and are excelled by none in the world for the purity of their waters, or the beauty and picturesqueness of their surroundings.

GENERAL GEOLOGY.

Azoic, or Primitive Rocks.—With the exception of a strip or narrow belt of the Lower Sandstone along the shore of Lake

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Superior, and showing itself on the St. Croix River, which constitutes the upper western boundary of the State, the entire northern portion is occupied by rocks of the older formations —usually known as Azoic, on account of the absence of the remains of animals. They belong to rocks of the granitic, sienitic, gneissoid and hornblende class, and owing to their frequent occurrence in large masses, have the appearance of being unstratified like the rocks of igneous origin, which have been forced up through them, here and there, by some fierce action of the great central fires of the earth. They are found, however, on closer inspection, to have distinct lines of bedding, and at some time in the remote past were undoubtedly simple sandstone, like the modern rocks of that description. The extent and boundaries of this geological district are indicated upon the accompanying map of the State by the long oblique markings. These rocks are not discoverable throughout the entire extent of this area, being obscured by immense beds of drift for a considerable distance on the southern side of the range before referred to, but their occasional exposure in low elevations and their general appearance where the drift thins out along the western border of the district leave no room to doubt its being the underlying rock. The rocks of igneous origin referred to are not found to any extent except along the lake shore. Beyond the north-eastern boundary of the State the trappean formation is more fully developed, and together with the sandstone hereinafter described, constitutes the rock of the Copper Region. In some places there are exposures of the sienitic rock which must eventually be worked for the valuable building stone which they are able to furnish.

Receding southward from the central area of the Azoic rocks, which are the lowest formations in the State of which we have knowledge, we come next to the

Sandstone District, which is also next in the order of superposition. This rock is thought to be equivalent to the sandstone formation at Potsdam, New York, and on this account has received the name of Potsdam Sandstone. For economical purposes, however, it is much less valuable than the New York

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rock, which is hard and compact, resisting the action of the weather, while this is more usually a crumbling mass of siliceous sand. In some localities it contains a considerable proportion of oxide of iron, which, serving as a cement, gives it greater compactness and durability. This is true of it to a greater extent in its eastern exposures than in the western part of the district.

As to extent and geographical position, the Potsdam or Lower Sandstone almost surrounds the northern and central Azoic district just described, there being but two slight interruptions in its continuity—one at the north-east, near the shore of Lake Superior, the other in the north-west, above the Falls of St. Croix. Its chief development is in the middle portion of the State, where it may be seen upon the geological map in the form of a crescent, its lower disc resting upon the Counties of Dane and Iowa, and its two horns touching the St. Croix and Menomonee Rivers in the north-west and south-west. The width of the centre is about one-hundred miles; of the horns thirty to sixty, the western being the wider of the two. The thickness of this formation is, in some places, five hundred feet; the upper portions running into alternations and intercalations with Magnesian Limestone; while at various points natural vertical sections expose argillaceous and dolomitic bands.

Next below the Potsdam Sandstone on the map, and next above in the order of position we find the

Lower Magnesian Limestone, (Calciferous Sandstone of Eaton.)—This is a light grey or ash-colored rock, compact and fine in its crystalline character, and marked by numerous cavities or geodes, lined with crystals of quartz, calcite, &c. The lower beds are frequently oolitic, (made up of rounded cavities filled with nodules) and in some places the entire mass is composed of rounded and angular concretions. For these reasons it weathers very irregularly, and hence is not usually valuable for building purposes; though at Hortonville, Outagamie County, at Ripon, and in several other localities, very respectable quarries have been opened. It is indicated

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on the map by angular markings, and is distributed, with some interruption, over a curvilinear strip of country parallel with the Sandstone district; cropping out in bold escarpments along the Mississippi and Wisconsin rivers. Its two extremities touch Lake St. Croix and the Menomonee. Owing to its greater durability than that of the Sandstone upon which it rests, it frequently gives origin to bold overhanging cliffs along the streams, and adds not a little to the picturesqueness of their beautiful scenery.

Resting upon the formation just described and exposed, now and then, throughout almost the entire extent of the Lower Magnesian district, is the

Upper Sandstone, sometimes called St. Peter's Sandstone, from St. Peter's river in Minnesota, where it occurs as a prominent and continuous formation. This rock consists of very minute, and, in size, unvarying particles of whitish, (sometimes buff, reddish or even brownish) silicious sand, with but little cement. It is consequently wanting in durability, and is utterly incapable of serving any purpose as a building stone. It nevertheless contains enough cement in some localities to enable it to withstand the action of weathering to a considerable extent; so that it is not very uncommon to find vertical exposures of it fifty or more feet in height. Indeed, in a few places there are found remarkable isolated natural monuments of it rising out of the midst of the level plain capped with the more enduring Trenton Limestone. Its thickness is quite uniform and not far from eighty feet. On the map it is indicated by minute dots, and shows itself in narrow lines and rings, chiefly within and along the border of the Lower Magnesian rock.

The Trenton Limestone Group, next in the ascending order, embraces what are popularly known as the Buff, the Blue and the Galena Limestones, and with the exception of the last-named, which is chiefly confined to the south-west, occupies that portion included within the outside border of the Lower Mgnesian and Upper Sandstone on the west and north, a line connecting Green Bay, Lakes Winnebago and Horicon,

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and thence running due south, on the east, the State line on the south, and the Mississippi on the south-west.

The Buff formation includes what are sometimes called the Black-river and Birds-eye limestones. In the south-western part of this State, it rests directly upon the Upper Sandstone. It consists of an impure, buff-colored magnesian carbonate of lime, and is frequently less than twenty feet in thickness; in other localities its lower beds are rather argillaceous than otherwise. This rock also makes its appearance at different places along the Mississippi above La Crosse, often capping cliffs and monumental outliers in the north-western portion of this State; while, in Minnesota it becomes a continuous formation, being conspicuous at St. Anthony Falls and several points near the line of boundary.

The Blue Limestone is the Trenton proper. It is a thin-bedded, bluish or bluish-grey magnesian rock. Where it occurs in the more eastern part of the State along Lake Winnebago and the Fox river, it is compact, firm, evenly-bedded, and is quite valuable for economical uses. The quarries at Appleton, Menasha, Oshkosh, Ripon, Waupun, Janesville, Mineral Point, Sun Prairie, &c., are of this rock.

The Galena formation of the Trenton Group overlies the preceding, as before intimated, and is the lead-bearing limestone. It is of a light or yellowish-grey color, is heavy-bedded, compact, and consists of minute crystals of magnesian carbonate; characterized to some extent, especially in some localities, by small cavities, lined with calcareous spar, iron pyrites and sometimes galena. It weathers very irregularly, and is not much used as a building stone. A portion of the quarry at Waupun, however, is of this rock.

Succeeding the Trenton Group, and lying directly upon it, we have a series of

Blue and Green Shales, for sometime called by geologists Hudson River Shale. It has its out-crop along the east shores of Green Bay, Lake Winnebago, Lake Horicon and thence south to the boundary line of the State. It also shows itself at several isolated spots and is present in all the mounds. Its

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thickness varies from fifty to one-hundred feet. The product of its decomposition burns to a light buff or cream color and along the line of its exposure is used for making brick. The brick clay deposit in the neighborhood of Milwaukee is thought to be of this origin.

The Clinton and Niagara Group, which comes next in order, consists of layers of limestone, beds of shale, (green, greyish-green, and arenaceous or sandy), and iron ore. As they occur along the eastern shore of Green Bay, these limestones are thin-bedded, compact dolomites, with thin shaly seams between. Near Sturgeon Bay they are quite white and are regarded as marble. But the most interesting member of this group is the stratum of Iron Ore which immediately underlies the limestone and rests upon shale. This ore occurs at several points throughout the district, but has not yet been discovered in large deposits, except in what is known as "The Iron Ridge," in Dodge County, which will be considered under its proper head.

The extensive limestone formation which constitutes a broad belt of some thirty-six miles in width along the shore of Lake Michigan from the southern boundary to the extreme point of the peninsula between the lake and Green Bay, so nearly resembles the Clinton formation that they may with propriety be classed together as one group. Large areas of these limestone formations are obscured by extensive accumulations of drift; still there are numerous exposures, and in various parts of the district valuable quarries have been opened. The quarries at or near Racine, Burlington, Grafton, on Milwaukee River, Sheboygan, Ozaukee, Fond du Lac, and in Calumet County, are of this character. At Manitowoc it is so fine-grained, compact and uniform in crystallization, as to have taken the name of "marble." The formation at Waukesha is so argillaceous in character, and so much less crystalline, with thin shaly partitions between the strata, that Mr. Lapham gave it the special name of Waukesha Limestone, to distinguish it from more coralline formations.

Corniferous Limestone ("shaly limestone,") which is thought by Professor Hall to be identical with what is known in

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New York as the Onondaga Salt Group, has been found hitherto in but one locality, to wit: in the vicinity of Milwaukee, where it has an exposure of a few miles in breadth on the lake between that city and the town of Pierceville. It is a compact, ash-gray, magnesian limestone, thin-bedded and laminated with thin layers of dark, glazed, shaly matter between. It is the Onondaga Salt Group which includes the beds of Gypsum, so abundant in New York and Canada West; but that mineral does not seem to be a part of the group in this State.

We have now completed a cursory review of the general geology of the State, which, together with the map, will enable the intelligent reader, however little acquainted with the general principles and the technicalities of the science, to acquire a fair knowledge of the character, order and mode of occurrence of the principal rock formations.

MINERAL DEPOSITS.

These are both numerous and valuable, constituting an important share of the natural wealth of the State.

The "Lead Region" occupies an area equivalent to that embraced within the Wisconsin river on the north, the Rock river on the east, the State line of Illinois on the south and the Mississippi on the west, or about 2,200 square miles. It nowhere, except in the case of a few mounds, rises to an elevation of more than about 500 feet, and is characterized by a ridge or "water shed" running parallel with the Wisconsin and about 12 or 15 miles from the general course of that stream. It is this shed from which the streams that drain the district take their origin, flowing north and south.

A striking peculiarity of the geology of this region—which may have been intimated in previous remarks—consists in the entire denudation from the surface, not only of the drift which covers the eastern and northern portions of the State but likewise of all the recent rock formations which lie above the Trenton Limestone. What the mighty agencies were that accomplished this vast work of clearing off the mines for the

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convenience of man, we can hardly determine, but when it is understood that, but for the removal of these formations, the work of mining must have been greatly increased if, indeed the mines had not been left concealed for ages, it seems almost a special work of Providence.

The earliest period at which mining began to any considerable extent in the Lead Region of Wisconsin was about the year 1827, from which time, until 1847, the amount raised constantly increased until the maximum of 54,634,000 pounds, was attained in the year last-named. The discoveries of gold on the Pacific coast about this time, turned the attention of miners away from the lead region to that more tempting field; since which time there has been a decline in the interest and a consequent decrease in the amount of lead produced.

It has been the concurrent opinion, however, of all geologists who have examined that district up to the present time, that the wealth of the mines has been only partially exhausted and that capital and labor may be profitably employed for years, both in working out numerous diggings unwisely abandoned, and in opening new deposits. Within the past two or three years, several heavy lodes have been struck, and the interest of miners has been to some extent re-awakened. What influence the published results of the explorations of Prof. J. D. Whitney, now carrying forward his work in a very thorough manner, may have upon the expectations of those who are sanguine of finding large workable deposits in the Lower Magnesian rock it is hardly possible to conjecture, but it is hoped that the sure prophecies of science, and the expectations of practical miners may fully coincide. Professors Owen, Daniels and Percival favor this theory of lower deposits and the practicability of economical working with the aid of sufficient capital. Probably no lead mines in the world, for quantity of mineral and convenience of working, excel those of Wisconsin. They are one of our chief sources of wealth, and as such are entitled to the appreciative consideration of the State.

Zinc is also found in considerable quantity in the "Lead Region." It occurs in the form of the Sulphuret (blende or

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or "black-jack") and of the carbonate (calamine or "dry bone"). Whether these ores can be obtained as an incidental product of the lead diggings, in sufficient quantity to justify the establishment of furnaces and factories is not yet fully determined; though the quality of the ore and the growing value of the white oxide—now coming to be extensively used as a pigment, in preference to the oxide of lead — strongly favor the presumption that they may.

Dr. A. A. Hayes, Assayer to the State of Massachusetts, to whom several specimens of the carbonate were submitted by the State Geologist of Wisconsin for analysis, thus speaks of Zinc generally and of these ores in particular in his official communication:

"The value of white oxide of zinc as a pigment is becoming generally known, and it has a market price much higher than lead. Most of the metallic lead consumed for paints is first made into white lead, which thus becomes the staple manufacture based on metallic lead. Now these ores of zinc, familiarly known as "dry-bone," are the best ores for producing the white oxide of zinc; but the manufacture is not, in this case based on the metal, but on the ore. By merely heating these ores on heaps of brush-wood, they lose their carbonic acid and water, and become soft mixtures of from 79 to 90 per cent. oxide of zinc, with earths and iron oxide. The material thus obtained, mixed with charcoal, gives in this muffle furnace, by one operation, nearly all the oxide of zinc which the ore contains. Extensive manufactories can be sustained by the consumption at present going on, of this product, which continues to be largely imported. But these ores are equally well adapted to the production of *metallic* zinc, a very useful metal, bearing a higher price than lead. The ores used abroad for the production of this metal, are far inferior to these in quality, and they are not extensively distributed. On economical considerations, therefore, these ores have a high value. They offer the advantage of employing a large capital with a certainty of the manufacture being profitable and important. A State promising such mineral deposits must be regarded as rich in resources of a highly important kind."

Prof. Whitney has informed us that a small furnace was established near Mineral Point, in 1859, for the smelting of this ore, but that for some reason its operations have been discontinued. It is his opinion that this product is too much scattered over the Lead District to justify an expectation of its economical manufacture until facilities for transportation are increased. In Belgium and Silesia in the Old World, and in

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New Jersey and Pennsylvania, it is found in large deposits, and it is not improbable that the superior ores of this State may yet be found in much larger beds than heretofore.

Copper, though found in small quantities in numerous places within the Lead Region, gives but partial promise of profitable returns. Prof. Owen, U. S. Geologist, speaks in high terms of the comparative value of the ore, and ranks the veins in the vicinity of Mineral Point "among the most important that have yet been discovered in the limestone formation." He further says, in more general terms, "The Copper Ore of Wisconsin forms an item in its mineral wealth which would be considered of great importance, and would attract much attention, but for the superior richness and value of the lead, the great staple of the State." These remarks were undoubtedly intended to cover the Lake Superior mines, though at the date of his Report (1851) the mineral resources of that region had been but little developed. Even now our knowledge of those resources is very meagre; still enough is known to warrant large expectations for the future.

The Iron Ores of Wisconsin occur in immense beds in several localities, and are destined to prove of great value to the State. The Penokie Iron Range, on the border of Lake Superior, and the "Iron Ridge" of Dodge County contain ore of superior quality and of an extent hardly surpassed in the United States. The former of these deposits presents almost a mountain range, extending from the Montreal River, which constitutes a portion of the north-eastern boundary of the State, some twenty miles in a south-westerly direction, and having a mean width of about eight miles, as indicated on the map. In an interesting communication published in the last volume of Transactions, Mr. Lapham says:

"It is not therefore an Iron Mountain simply, like those heretofore known in Missouri and elsewhere; but, as its name imports, an Iron Range; as if mountain masses of iron had been passed between gigantic rollers, and drawn out for a length of twenty miles. The ore is found in a very ancient chloritic state, so ancient that it is supposed to have been deposited long before the existence of vegetable or animal life upon the globe. The slate rests upon a light-colored quartz-rock, which usually extends to the base of

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the Range on the south side. The ore is laminated like the slate and apparently has had the same origin; for as we ascend from the quartz-rock, the slate becomes more and more ferruginous until it passes into pure iron ore. This change is so gradual that it is often difficult to determine where the slate ceases and the ore begins, or how much should be classed as iron ore and how much as ferruginous slate. We noticed places where the ore had a thickness of *sixty feet;* at other places ten; and wherever we could get access to the rock at the proper place, the ore was found."

As to quality of the ore, Mr. Lapham thus remarks:

"The magnetic ore of the Penokie Iron Range contains a notable and much varying proportion of silica in its composition, but is free from sulphur and other deleterious qualities—corresponding in this respect with most of the iron ores of this remote geological epoch. It is in some localities so highly magnetic that particles adhere to the hammer when struck, like iron filings to a magnet; and the compass needle as often pointed towards the east or west, as to the north; in one instance being entirely reversed, the north end pointing to the south. At Penokee, where Bad River crosses the Range, the ore exists in such abundance that it may be obtained from the face of the hill, much as stone are taken from an ordinary stone quarry. Large masses that have fallen from the cliffs, now lie loose upon the surface, and will supply a furhace for many years, before it will be necessary to resort to the original bed."

But few specimens have been analyzed. It is the conviction of all geologists who have visited this Range, however, that the ore, though rather silicious for easy working, nevertheless compares favorably with the valuable magnetic ore in northern New York, or even with the magnetic ore from from which the famous Swedish Iron is made.

According to Dr. Owen, the ores found in different localities are rich in iron, yielding fifty to sixty per cent. of metal. The distance of these beds from the nearest harbor—some eighteen or twenty miles—is an embarrassment in the way of their present working, but the improvement of one or two natural harbors, and the construction of railroads—both practicable without enormous expense—will open them to the commercial world. On the subject of their availability, Messrs. Foster & Whitney in their report on this district remark as follows:

"The physical obstacles are not of such a character as to interpose a formidable barrier to the successful working of these mines. Elevated from eight to twelve hundred feet above the lake, the ground affords a gradual and easy descent; the streams furnish an unlimited amount of water power

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for the propulsion of machinery, and the magnificent forests of yellow birch and maple will yield an ample supply of charcoal for the reduction of the ores; while, at the landing by the lake shore, the lee of Little Presqe Isle forms a shelter for vessels in all but north-east storms. The cities along the shores of the lower lakes, will, at all times, afford market for these products, whether wrought into the finer varieties of bar iron and steel, or in the form of blooms and pigs. When we consider the natural advantages which these localities present, it seems reasonable to suppose that the day is not distant when the fabrication of iron will be successfully and extensively prosecuted in this region."

The Iron Ridge of Dodge County is hardly less interesting than the Penokie Range just described. Its limits have not been very well defined, but it is the opinion of geologists who have hastily examined it, that it covers an area of some twelve miles square, being confined chiefly to Dodge County, though extending in a south-easterly direction into Washington County. The ore appears to occur as a regularly included stratum, between two limestone strata of the Clinton and Niagara Group, as before named; a thin stratum of clay or shale intervening between it and the rock upon which it rests. This iron stratum varies in thickness from eight to thirty, and even sixty feet, and dips so slightly as to be susceptible of economical working to the limit of its extent. The form of occurence is that of small flattened nodules, cemented together. When exposed upon the surface and separated by weathering, these nodules have a greasy feel, and the appearance of flax-seed, which circumstance has given them the name of "seed ore."

Mineralogically and chemically considered this ore presents some peculiar characteristics—the most marked of which is the small proportion of silex, as compared with many other ores, particularly that of Penokie Range. The following analysis by Dr. Owen and Prof. Cassels, respectively, will show the great difference in this respect:

Proximate constituents of Penokee Iron Ore, from Tyler's Fork—Dr. Owen.

Peroxide of Iron,	51.5 per cent.
Protoxide "	27.1 "
Mixed Oxides,	78.6=56.3 iron.
Silica,	20.8
Magnesia,	00.6
Alkali,	50.2
Fluoric Acid,	trace.
	100.2

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Proximate constituents of Dodge Co. Iron Ore, from Sterling—Prof. Cassels.

Peroxide of Iron,	76.72	53.72 Iron. 23.00 Oxygen.
Silica,	10.00	
Clay,	4.00	
Sesquioxide of Manganese,	1.05	
Water,	6.00	
Loss,	2.21	
	100.00	

Owing to this small amount of silex the labor of smelting is very much diminished, no flux, other than the clay which accompanies it, being necessary to the process. Indeed in some cases the introduction of water-washed sand, for the purpose of retarding the process of smelting, has been found advantageous.

Two or three companies were organized some years since for the working of these mines and the manufacture of iron, but owing to the want of proper tariff protection, and perhaps, also a lack of adequate capital, their operations have never been very extensive.

The Wisconsin Iron Company established the first stack furnace erected in Wisconsin, at Mayville, where the business has since been carried on upon a moderate scale. They obtained their ore at a cost of 50 cents a ton, delivered at the furnace, which, together with the excellent water power available for driving their machinery, and the heavy surrounding forests of timber, would seem to leave but little to be desired for the economical production of iron. At last accounts this, the Hartford and one or two other furnaces were turning out about four tons each of good metal per day.

There are also indications of valuable deposits of iron at several places in Sauk and Crawford counties. The mines in Sauk have been for some time worked by Mr. Tower, proprietor of Ironton Iron Works, and metal of excellent quality is furnished therefrom for the manufacture of castings at the Sauk City Foundry.

It will thus appear that Wisconsin has a rich endowment of several of the most valuable economic minerals, including lead, zinc, copper and iron. A few words, in conclusion, upon this branch of the subject, in relation to

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VARIOUS OTHER ECONOMIC MATERIALS.

Of these there is a large variety, but owing to the limitation of the geographical surveys hitherto made, to the metalliferous formations and deposits of the State, our means of information are few and partial.

The Building Stones of Wisconsin, are so fully discussed in a paper communicated by Prof. E. Daniels, and herewith presented for publication, that a detailed consideration of them in this connection is rendered unnecessary. They are widely distributed, so that almost every county and town has its available quarries. Marbles of various kinds are likewise found in the State. Some of them are beginning to attract attention and are likely to prove valuable. Certain quarries on the Menomonee and Michigamig rivers are spoken of in high terms in the report of Messrs. Foster and Whitney, U. S. Geologists, as affording beautiful varieties, whose prevailing color is light pink, traversed by veins or seams of deep red; while others are blue and dove-colored, beautifully veined, all susceptible of a high polish.

Gypsum has been found in the sand rock on Lake Superior, along the eastern shore of Green Bay, and at several other places, though the evidences are not very conclusive that it occurs anywhere within our borders in very considerable quantities.

Clay of superior quality for making brick, and of fair quality for pottery ware, is found in numerous localities. The famous "Milwaukee Brick," remarkable for their beautiful cream color, and which, on this account, have been extensively imported into eastern cities, is made from a fine clay which abounds not only in the vicinity of Milwaukee, but also along the shore of the lake as far north as Manitowoc, and at many places in the interior. Watertown, Whitewater, Stoughton, Portage, Ozaukee, Manitowoc, West Bend, and various other towns, use it almost exclusively in the manufacture of brick. The number made annually at Milwaukee is scarcely less than twenty millions, with a valuation of about $120,000.

Just what it is that occasions this peculiar and popular color

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has not been fully determined by analysis of the clay. It may be owing to a relative absence of iron, which gives the red color to ordinary brick, or to some peculiar changes in the composition consequent upon heating in the kiln. In some localities it is doubtless due to the shaly character of the clay, which seems to have been formed by a decay of the shales heretofore described.

At Manitowoc, Newberg, Whitewater, and other places, these shaly clays are being used to a considerable extent and with success for the manufacture of potter's ware; and, with proper encouragement, our own home potteries might be made to supply the entire State with the coarser wares of this kind. Moreover, there is reason to believe that we have, in at least one locality, beds of Kaolin, or Porcelain Clay, of very superior quality, as will appear from the following communication from the Rev. J. Murrish, of Mazo Manie:

DR. J. W. HOYT,

Dear Sir:—The Kaolin of which I spoke the other day, and upon which I promised to furnish a short article, is found near Grand Rapids, on the Wisconsin River. It was first noticed by Mr. John Poad, and others, who were exploring that region for Mineral Veins, and specimens of it brought back and presented to me. The party afterwards sent a box of it to England to have it tested, and it was pronounced to be equal to the best English Clay.

I cannot speak of the geological position and extent of this clay bed as I could wish, not having visited it myself, but am assured by the parties who discovered it, that it is sufficient for manufacturing purposes; and from their description, I have no doubt the beds are very extensive. The importance of this discovery will appear, when we consider that Kaolin is found in but very few places in the United States; and nowhere, that I know of, in sufficient quantities, to justify the investment of capital necessary to manufacture it, but here.

I hope to explore this part of the State myself sometime during the next summer, after which I shall be able to furnish you with more extended and important information on this discovery. JOHN MURRISH.

Owen's Geological Report also makes mention of beds of Kaolin at Whitney's Rapids, lower on the river.

Water Lime, also known as Hydraulic Cement, occurs in numerous places in connection with the Lower Magnesian, the Trenton, and the Clinton and Niagara Groups of limestone. Prof. Daniels informs us he has found it, as a part of the Lower

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Magnesian, at the quarries near Ripon, Markesan and Hanchetville, and at Way's Landing, on the Mississippi; at the base of the Trenton, Limestone at Mineral Point, Beloit, Janesville and Ripon; at the base of the Niagara and Clinton Group, "along the bold escarpments which it presents from Horicon northward." He also mentions some argillo-calcareous beds of the Potsdam Sandstone, one of which is largely developed at Trempealeau, on the Mississippi.

Several specimens of this water lime found in some of these localities, were forwarded by Prof. Daniels to A. A. Hayes, Assayer to the State of Massachusetts, for examination, with the following results:

	No. 1.	No. 2.	No. 3.	No. 4.
Carbonate of Lime,	67.12	58.04	65.40	56.14
Carbonate of Magnesia,	8.68	12.76	20.80	7.62
Silicate of Iron and Alumina,	21.06	.....	5.20	.....
Silicate of Alumina,	.....	24.40	.....	32.43
Oxide of Iron and Alumina,	.....	.....	.....	2.27
Water,	1.60	.70	1.20	1.28
Loss,	.10	.30	.20	.26
	100.00	100.00	100.00	100.00

No. 1, was taken from the upper beds of Lower Magnesian, near Ripon.
No. 2, from lower layers of Trenton, at Miltimore's Quarry, Janesville.
No. 3, from the base of the Niagara and Clinton, just east of Horicon.
No. 4, from the Potsdam Sandstone, at Trempeleau.

From these analyses, Mr. Hayes concludes that the specimens examined by him are proper hydraulic limestones, and that mixtures of them could be made which would possess the hydraulic property (the property of hardening under water) in a high degree.

Water lime possesses great economic value, and inasmuch as great damage and pecuniary loss result from the importation and use of that which, either never was good, or has lost its hydraulic power from long exposure to the air, it is important that the people of our State acquaint themselves with the places where the best hydraulic limestones may be found, and that measures be adopted to favor the manufacture of this cement.

Marl.—This is a term of rather uncertain significance, being frequently applied by agricultural writers to mere alluvial clays

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containing an admixture of various mineral deposits in a powdery state, or in lumps which are pliable and crumble down on exposure, even though they contain no lime whatever. Properly speaking, marl is a natural mixture of carbonate of lime, in some of its forms, with clay, sand, or the peaty matter of marshy lands, or with two or more of these substances at the same time. There are, therefore, several varieties of marl, such as chalk-marl, clay-marl, sandy-marl, peaty-marl, and shell-marl.

Several of these varieties occur in this country, but there appears to be a lack of appreciation of their value as manurial substances, and consequently hundreds of extensive beds, though known to their owners, are yet unworked. In the Eastern and Middle States, where the agriculturist has not an unlimited area of virgin lands which he may occupy as the old lands fail in fertility, the green sand-marls of New Jersey, Delaware and Maryland, and the clay and shell-marls of New England, are coming into use. But in the West, and in our own State, notwithstanding the evidence that our soils, however rich and fertile, originally, cannot bear continued cropping without deterioration, vast quantities of this valuable mineral manure lie unimproved.

Most of the Wisconsin marls are of the clay and shell varities. The former, with a proportion of shelly matter almost sufficient to entitle it to the name of shell-marl, is found on the bottom of a great many of our lakes, and as a part of the mucky mass of the alluvial deposits of our numerous dry marshes. It is also found in large quantities in the crevices of the Lead Mines. A sample of this red crevice clay-marl taken from diggings near Shullsburgh, was analyzed by Dr. Hayes, at the instance of Prof. Daniels, and found to contain:

Water,	12.20	per cent.
Silicate of Alumina,	49.20	"
Oxide of Iron,	8.80	"
Carbonate of Lime,	22.60	"

The shell-marls, properly so called, also abound in many parts of this State. These, as the name indicates, consist

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largely, sometimes almost wholly, of minute shells—a gritty, yet pasty mass when wet, pliable, powdery and chalky when dry, crumbling down to fine, white dust, if much exposed. They are usually found in the bottoms of morasses, drained ponds and lakes, though sometimes on lands so high above any present body or sheet of water, as to show conclusively that their proper geological classification is with the tertiary formations. Beds of this character are found three or four miles west of Genesee, and at Potosi. The first named bed is some seventy feet above the valley of the Fox River, the second four hundred feet above the level of the Mississippi.

Good shell-marls have also been found in Waushara County, west of Wautoma, near Delhi in Winnebago County, at Burlington, Racine County, on the farm of Joseph Goodrich, at Milton, Rock County, and no doubt at many other places of which we have not received information. The specimens in the State Agricultural Rooms, taken from Burlington and Milton, are of excellent quality, and would pay the farmer well in those neighborhoods for judicious application.

The good effects of marl upon soils which are either physically or chemically defective, have been observed from the earliest times, and it is hoped that the agriculture of Wisconsin may be made ere long to realize the benefits of its use.

The Marsh Mud which abounds in Wisconsin, as scarcely in any other State, in the numerous beds of former lakes, is also worthy of enumeration among the natural economical products of the State. It has been but little used hitherto, but its richness in carbonaceous matter and in various salts, cannot fail to render it very valuable as a means of improving our light soils, whether it be used alone, in combination with lime, or in the form of a compost with barn-yard manure.

Peat of excellent quality has been discovered in various localities, and doubtless occurs in many of our dry marshes where it has not yet been found. Indeed it has been estimated by one whose observation has been extensive, that the surface covered with peat will scarcely fall short of 500,000 acres, with an average of not less than 600 cords to the acre. A single

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farm in the vicinity of Madison, and belonging to Col. G. H. Slaughter, is estimated to be capable of furnishing 300,000 cords. Formed by the gradual decay of successive crops of aquatic plants and mosses, upon a basis of earthy matter washed in to the extent of finally filling up the shallow lake which once occupied the place of the present marsh, peat must necessarily consist of the most valuable combustible and illuminating material. In some cases the included trunks and branches of trees have been entirely converted into lignite or brown coal. The extensive use of peat as a fuel in Ireland and other countries of the old world, is familiar to every one, but it may not be so well known that it is susceptible of manufacture into illuminating gas and a great variety of products which are important articles of commerce, such as sulphate of ammonia, acetate of lime, naptha, paraphine, fixed and volatile oils, &c.

Peat gas is extensively used in Paris, experiments having shown that it is more economical; a single peat gas burner yielding a light equal in intensity to 23½ candles or to $3\frac{6}{10}$ burners consuming coal gas. According to Silliman's Journal of Science, the illuminating power of the pure oil from peat—the illuminating material *par excellence*—has been found, at equal pressures, 705, the intensity for coal gas being 100; and with equal volumes their numbers are as 706 to 100. It is not unreasonable to conclude, therefore, that in the course of time, when fuel and illuminating materials shall have become more expensive, these extensive peat beds of Wisconsin will have a great economical value for purposes of this kind. Experiments have been made with some of the peat taken from the extensive deposits found upon the farm of Col. Slaughter, but owing to the want of properly adapted retorts and other means of manufacture, the results were not thought to warrant the use of peat instead of coal, unless the works should be considerably modified.

Peat is also valuable as a manure, and may be used in the same manner as muck or marsh mud.

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SOILS.

The soils of any portion of country are, of course, determined somewhat by the character of its geological formations. Indeed, except where the deposit of diluvium or drift is quite universal in extent and very deep, the soils may be predicted, in general terms, with very great certainty. In this State, as has been already remarked, a great portion of the surface bed of the rocks enumerated and described in the first sub-division of this Report is covered to a considerable depth with diluvial deposits. The classification of the soils is nevertheless based upon geological boundaries — the soils of the entire portion occupied by limestone formations being calcareous, those of the Potsdam Sandstone region, sandy, and those of the Primitive or Azoic district, various, though with very little admixture of lime. There are, necessarily, modifications here and there, growing out of local deposits formed by the washing of streams, the wearing down of elevations, and the accumulation of material in the lower places; but in the main, the classification is as above.

Describing them more particularly, and in terms which anticipate somewhat the character and distribution of vegetation, the soils of Wisconsin may be designated as the soils of the "opening," of the prairie, and of the timbered districts — the latter being sub-divided into the pine and the hard-wood regions.

The soil of the openings is generally either a mixture, in small quantities, of clay and calcareous loam, with a fine silicious powder or sedimentary deposit,—and is therefore well adapted to the growth of wheat and its kindred cereals,— or a sandy soil of but little natural productiveness. The soil of the prairies is a rich, deep, vegetable mould, of the most productive character; the soil of the heavily timbered, hard-wood districts, clay, clay loam and calcareous loam; of the evergreen or pine region, the mixed materials of the drift formation with the ditritus of the primitive rocks which characterize that portion of the State.

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CLIMATE.

Distribution of Heat.—The latitude of Wisconsin would indicate a rather cold climate. Meteorological observations have demonstrated, however, that the mere circumstance of latitude is an unsafe criterion by which to judge of temperatures, since, within a given zone, owing to peculiarities of position and configuration of surface, it not unfrequently happens that the terms north and south lose all their significance as indices of the distribution of heat. In other words, the isothermal lines, or lines of equal temperature, pay nothing more than a general regard to the lines of latitude, and are often very tortuous in their course, crossing and re-crossing those parallels in gradual, or in sharp, sometimes fantastic, curves.

Bounded by great lakes on the north and east, and exposed on the south and north-west to the warm, moist winds of tropical seas in summer, and to the cold, dry winds of sub-arctic regions in winter, the scientific climatologist might with certainty predict an extensive range of temperature for the year between the maximum and minimum of summer and winter, respectively, as also between the mean or average of one and the other of these extreme seasons. And the results of numerous actual observations, extending through a series of years, show that the causes named do really produce those anticipated contrasts and local peculiarities, and to a very remarkable extent modify the climate of the State.

A reference to the map will show this at a glance, for the isothermal lines thereon, instead of varying slightly in their direction from a course due east and west, cut the parallels of latitude at various angles, from ten to ninety degrees. The small dimensions of the map limited the location of the isothermals to about the number there shown, and we have accordingly drawn merely the means for the year, and for the four seasons, at intervals of five degrees, together with the means for the two extreme months of spring and autumn, respectively. Future observations may show these lines to be slightly out ot true position, but in locating them we have used

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the best authorities at hand, and feel confident that they are not very materially out of the way.

Beginning with spring, the season of planting and of early vegetable growth, the first line traced on the map, and one of the most interesting of all, is that which indicates a mean temperature of 45° Fahrenheit, for the season embracing March, April and May. Commencing at Hudson, on the St. Croix Lake, it passes successively through portions of Pierce, Dunn, Eau Claire, Trempealeau, Jackson, Monroe and Juneau counties, to Portage, and thence by a rapid southward descent to Chicago; thus showing that the mean temperature of spring is as high in the north-western part of this State, even as far north as Hudson, as it is at Chicago, in Northern Illinois. This is a remarkable fact, and when generally known cannot fail to correct the erroneous impressions which now prevail as to the agricultural capacity of the climate of North-western Wisconsin.

The spring mean, of 40°, enters this State a few miles below Superior City, and descending in its course south-easterly, crosses Green Bay and Door county just above the 45th parallel.

The isotheral lines (lines passing through points whose *summer* temperature is equal) are also worthy of special attention. It will be observed that the mean of 70° Fah., (which is the average temperature of Southern Pennsylvania, and of Northern Ohio, Indiana and Illinois,) when it reaches Chicago, in its western course, suddenly bends northward, entering Wisconsin in the county of Rock, passing through Janesville and Madison, and thence bears north-westward to the county of St. Croix, whose western boundary it cuts at a point between Prescott and Hudson; from which it appears that the counties of Rock, Dane, Sauk, Monroe, Jackson, Trempealeau, and the southern portions of Dunn and St. Croix, have the average summer temperature of Chicago and Harrisburgh. Of course the counties south and west of this theral line, touching Chicago, Janesville, Madison and St. Paul, have a still higher summer average, corresponding to Central Ohio and Western Virginia.

The isothermal line touching places whose temperature is

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five degrees less than 70, or 65°, cuts off only a narrow strip of Northern Wisconsin, intersecting the north-eastern boundary at about latitude 45° 30′, and passing through Superior City in the extreme north-west. According to Blodgett, this last average (65°) is sufficiently high to generally ensure the ripening of Indian corn; and it would therefore appear that almost the entire State lies within the climatic range of this, the most sensitive and most exposed of our cereal grains; while a large portion of the State has an average excess of several degrees of heat, over and above what is necessary to perfectly mature it.

The isothermals of autumn also indicate a favorable climate as compared with the latitude, the mean line of 45° bearing northward in its westward course from a point above the city of Green Bay to about the center of Polk county.

The mean line of 50°, however, takes a different direction, entering the eastern boundary at about Milwaukee, and thence passing in a south-westerly course to Beloit, near which place it crosses the boundary line of Illinois. This shows a tendency to a change which, if sufficiently marked, would give the eastern portion of the State a milder winter than the western. The mean of November (see line touching places with an average of 32°) shows this tendency yet more strikingly.

The mean line of 25° for winter barely touches the State, cutting off the south-west corner of Kenosha county, and thence pursues a course nearly coincident with that of 50°, autumn. The mean line of 20°, winter, in its eastward course from Iowa, crosses the Mississippi near the northern boundary of Crawford county, and thence bears gently northward until it reaches Portage City, from which point it takes a more decided northern direction, crossing Lake Winnebago near the middle, and striking Lake Michigan near the village of Sturgeon Bay. The mean of 15° has the same general direction, and crosses simply the three north-western counties. Here, then, we have this remarkable phenomenon—the isothermal lines of late autumn and winter on the one hand, and the lines of spring and summer on the other, crossing each other at right angles.

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The explanation may be found in the tempering influence of the lakes, which, more slowly than the land, part with the heat acquired in summer, in the warm Gulf currents of air which in spring and summer move along up the great trough of the Mississippi valley, and in the cold winds from the British Territory, which in winter gain the supremacy and sweep over the entire western portion of the State. The great Dividing Ridge running north and south, and which nearly coincides in direction and position with the Fourth Principal Meridian, may also contribute to increase the difference between the summer and winter temperatures of the eastern and western portion of the State, by partially preventing the overflow of either the warm or the cold currents above mentioned.

The mean temperature of the year is indicated on the map by two isothermal lines, one of 45°, the other of 40°. The line denoting a temperature of 45° passes near Manitowoc, Oshkosh, Black River Falls, and Hudson; in other words, directly through the center of the State. The line of 40° crosses Lake Superior without touching Wisconsin.

If we compare the temperature of the whole State in a general way with the temperature of different portions of Europe, we shall find our summers corresponding with those of Southern France, our winters with those of Sweden, and of Russia on the Black and Caspian Seas.

Destructive frosts seldom occur late in spring or early in autumn. The June or July frosts of 1859 were exceptional for this State, and prevailed more disastrously in Ohio and throughout the Middle States than here.

Distribution of Moisture.—This is a question of scarcely less importance than that of temperature, inasmuch as the amount of rain may determine the cultivability of an important district, no matter what the basis of the soil or distribution of heat. But quantity alone does not determine the fertility or barrenness of any district; if it did, some of the most barren portions of country would be the most fertile. Distribution throughout the year is also important; for, should there be a heavy precipitation during the winter, and yet scarcely any in

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the summer, the region so characterized must be unproductive, unless watered by artificial systems of irrigation. This is partially true of sections of New Mexico and California.

The annual precipitation of rain in Wisconsin is 34 inches in the northern part, 30 inches in the middle half, and 35 to 40 inches in the southern; while New York has 40 inches, New England 36 to 42, Illinois 40 to 48, the Southern States 50 to 63, and the Great Plain of the Interior, west of Minnesota, Nebraska and Kansas, but 15 inches. The annual fall is fair, therefore, but a little below the average of some of the most productive portions of the United States. But if now we look to the distribution for the seasons of the germination and growth of vegetation, the scale is turned in our favor.

Thus the amount of rain which falls during the three months of spring is as follows: Throughout the southern part of the State, as far north as Portage, 8 inches; in the remainder of the State, 6 inches. This is likewise the amount which falls in Michigan and Southern Canada, and in Northern New York, Ohio, Indiana and Illinois. In the central portion of the Mississippi Valley it equals 12 to 15 inches.

The summer precipitation, except over a narrow strip perhaps 20 miles in width along the eastern and northern boundaries, where it is but 10, amounts to 12 inches. The fall in Michigan, Canada, Northern New York, the greater part of Ohio, and the western half of Pennsylvania and Virginia, is but 10 inches. In this season the comparison is favorable, and further details, showing how evenly the precipitation is distributed over the three months of the season, would still further enhance the superiority of this climate.

The autumn distribution is also favorable, the amount for the greater portion of the State (all except a strip embracing Buffalo, Dunn, Pepin, Pierce, St. Croix, Polk, Douglas, La Pointe and Ashland counties) being but 7 inches. In the north-western counties named, it is but 6; in the northern, 8 inches. In Illinois it equals 8 to 10 inches; in Michigan and Northern Indiana and Ohio, it is 8; in the remainder of Indiana and Ohio, 9 to 10; in North-western New York, 9; in New Eng-

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land, 10; and throughout the Southern States, 10 to 12 inches. Autumn being the season for gathering crops and preparing the soil for the work of the succeeding spring, it is, of course, desirable that the fall of rain be only moderate.

The winter contrast is still more marked. In the extreme south-east corner, the fall for the three winter months is 5 inches; but over all the rest of the State, except a border along the St. Croix, where it is only 2, the fall is but 3 inches; while that of Michigan is 5; of Illinois, Indiana, Ohio, New York and New England, 7 to 10, and of the Southern States, 8 to 18 inches. From this it will appear that the winter climate of Wisconsin, though cold, is, at the same time, dry; and to this, in part, may be attributed its remarkable healthfulness as compared with other climates.

Protracted and serious drouths are scarcely ever known.

Agricultural Capacity of the Climate.—It may be inferred from the foregoing summary of the distribution of heat and moisture, that the climate of Wisconsin is adapted to the production of all the cereal grains and grasses commonly grown in this country, and that it will also admit of the successful cultivation of the fruits which belong to the northern belt of the North Temperate Zone. It need only be remarked under this head, therefore, that it is pre-eminently fitted for the production of that greatest staple of commercial breadstuffs, wheat.

In the Eastern, and in portions of the Middle States, the production of wheat has largely diminished; while over a wide belt across the lower Western States, its cultivation is being abandoned on account of the precariousness of the crop. According to Blodgett, "Where the humid, tropical heats intrude into the cooler zone, as over much of the interior plain below Cincinnati, from the Gulf to Central Iowa, wheat cannot be grown. The greater part of the United States is liable to these extremes as temporary conditions, originating rust, mildew, blight, and probably the injury which in Southern Illinois renders the grain unhealthy as food." It is generally admitted by the best authorities on climatology that the successful culti-

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vation of wheat is confined to within the isothermals of 65° and 71° for the months of July and August. This practically confines its production to a belt across the northern part of the United States and the southern portion of Canada. So far as the United States alone is concerned, this belt embraces Minnesota, Wisconsin, Michigan, New York, New England, and portions of Northern Iowa, Illinois, Indiana, Ohio and Pennsylvania, and of Western Virginia. But it is also a well established fact, that the northern portion of this climatic belt is best adapted to the production of this cereal. This still more narrowly bounds the wheat-producing area, reducing it to some 250,000 sqnare miles. These are facts of great importance, and serve to explain how it is that WISCONSIN IS THE GREATEST WHEAT STATE IN THE UNION.

Healthfulness of Climate.—No intelligent person, after even a hasty review of the physical geography of Wisconsin—its relative position on the continent, and its consequent distribution of temperature and moisture—its high, undulating surface—its abounding lakes and streams of pure water, and its remarkable distribution of timber—could fail to see that it must necessarily have a delightful and most healthful climate: and such is the fact. The winter, long, dry and uniform in temperature, is abrubtly followed by a short, pleasant spring, remarkable for the rapidity of vegetable growth. The summer has a uniform but not intense heat, steadily carrying forward the growth of spring to an early maturity; and the autumn has scarcely a parallel in any clime for all that contributes to the most buoyant and perfect health of man and beast. But on this point the logic of statistical figures is of more worth than any rhetoric of enthusiastic description.

According to the census of 1850—the last, a report of which has been published in full—the number of deaths in ratio to the number of inhabitants, in some of the Northern States, is as follows: in Massachusetts, 1 to 51; Connecticut, 1 to 64; New York, 1 to 67; Ohio, 1 to 68; Illinois, 1 to 73; New Hampshire, 1 to 74; Indiana, 1 to 77; Maine, 1 to 77; Michigan, 1 to 88; Iowa, 1 to 94; Vermont, 1 to 100; and Wis-

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consin, 1 to 105. By this showing—and a further comparison with the remaining States would only increase the relative advantage of this State—WISCONSIN IS THE MOST HEALTHFUL STATE IN THE UNION.

FLORA AND FAUNA.

Flora.—There has not yet been made a thorough botanical survey of the State; but the public spirit and laudable scientific enthusiasm of several naturalists—among whom Messrs. Lapham of Milwaukee, Hoy of Racine, and Hale of the State University, are worthy of most prominent mention—have so far made up for this neglect of the State, that the State Agricultural Society has been enabled to publish in its 2d, 3d and 5th Volumes of Transactions, catalogues of some 1300 species of plants; and this present volume will include additions to the number of 160. Great credit is due to the scientific gentlemen who have, on their own account and without remuneration, carried on these important investigations in the botany of our State.

The Trees indigenous to Wisconsin embrace nearly, if not quite, all those species which belong to the best American portions of the North Temperate Zone. The Oak, the Maple, the Elm, the Cherry, the Hackberry, the American Linden, or Basswood, the Ash, the Walnut, Butternut, the Hickory, Beech, the Poplar, the Birch, the Sycamore, and others of the hardwood families are here, each presenting its numerous varieties, and all flourishing in their respective localities to a degree unsurpassed in any portion of the country. The evergreens are also here, with their numerous families and species—Pines, Hemlocks, Spruces, Firs and Cedars—occupying large areas in some portions of the State, and yielding immense quantities of the best lumber produced in the world.

For a detailed description of the Forest Trees of Wisconsin, see the interesting papers of Dr. P. R. Hoy and I. A. Lapham, Esq., embraced in the second and fourth volumes of Transactions above mentioned.

The Distribution of Timber is a subject of so much interest

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that we have thought proper to illustrate it in a general way upon the accompanying map. Great efforts have been made to insure correctness of representation, and it is believed that the distribution, as shown thereon, will not be open to the charge of serious error.

On referring to the map, it will be observed that the southern half of the State is characterized by the hard woods, the northern portion by evergreens. There are numerous exceptional localities, but this is a correct statement of the general distribution. Still more generally and geologically speaking, the evergreens belong to the Primitive, or Azoic, and the Sandstone regions, the hard wood to the Limestone districts.

To define geographically and more narrowly, the heavy hardwood forests are confined principally to the northern three-fourths or four-fifths of the eastern portion of the State; being embraced within those counties which lie north of Racine along the lake, and extending from thirty to sixty miles inland. There are also forests of considerable extent in other portions of the State; as, for instance, in Green, Grant, Sauk, Richland, and Bad Ax Counties; as also along many of the streams in the evergreen region of the State; but they are comparatively isolated, and do not give character to the general district where they occur.

In all the remainder of the southern portion of the State, together with a strip of considerable extent along the Mississippi and St. Croix, as high as the northern limit of the Potsdam Sandstone, the surface of the country is characterized by Prairies and Oak Openings.

The Prairies are among the most beautiful and the most valuable in the world; being quite limited in extent, skirted with timber, for protection and fuel, and well watered by beautiful lakes and unfailing streams.

The "Openings" are a peculiar feature of Wisconsin and Minnesota, not being characteristic of any other State. They are of two kinds—the Burr Oak and the Black Oak. The Black Oak Openings belong to the sandy regions, and are not marked by any considerable agricultural capacity. The Burr

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Oak Openings, however, are among the most productive portions of the State, being especially adapted to the continued production of wheat. They are, moreover, the most beautiful portions of the varied and picturesque surface of the country. Grouped here and there, like so many old orchards, on the summit of a gentle swell of land, or on the border of marsh, prairie or lake, there is nothing in the whole catalogue of American sylva that equals these Burr Oaks for the charming, homestead-like expression they give to the landscape. The timber they furnish is brittle and of but little worth, except for fencing and fuel; still, abounding as they do in in what would otherwise be a prairie country, and constituting so charming a feature of Wisconsin scenery, they possess a value which is beyond computation.

It has been already remarked that the evergreens occupy the northern portion of the State. Mention was also made of the different genera which belong to them. It only remains to be said, in this connection, that the White, Red and Yellow Pines, the Double Spruce, the Tamarack, the Hemlock, and the Red and White Cedar, are the most valuable, and that they abound to an almost inexhaustible extent all along the great number of streams which pour their waters into Green Bay on the east, and the Mississippi on the west. It will thus appear that for a State containing so much prairie, and so large an aggregate area of other lands ready for the husbandman's plowshare, Wisconsin has been very remarkably favored in the quantity, variety and distribution of its timber.

Fauna.—Inasmuch as the plan of this discussion embraces simply what is of direct economical interest, it will be sufficient to say, under this head, that the woods and prairies of Wisconsin abound in the usual wild game of the West, while its waters are filled with the the most desirable species of fish, including that most delectable member of the whole finny tribe, the Speckled Trout. At certain seasons of the year the deer, the prairie chicken, the quail, the duck and other game are taken in great numbers and shipped to the eastern markets. And at some points on Lake Michigan, fisheries have been established

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which promise well for the future. One of these—the White Fishery, at Kenosha—according to the report from that county, (see page 301,) is considered one of the best on the lake; large quantities of the fish which there abound, being annually taken, salted and shipped to different parts of the country.

INDUSTRIAL CONDITION OF WISCONSIN.

Under the general head of Industry we design to include all the leading branches of business which directly contribute to the material wealth and progress of the State. The subject of industrial condition is accordingly a very comprehensive as well as a most interesting one, and will require to be considered under five general heads—Agriculture, Mining, Lumbering, Manufacturing, Commerce. Our limits of space will admit of nothing more than a mere summary of the most important facts and figures in relation to each.

AGRICULTURE

Is the chief material interest of Wisconsin, and hence justly claims our first attention. The agricultural *capacity* of the State has virtually been considered under the several preceding heads; its condition and progress require discussion more in detail, and we proceed at once to consider, first, the amount and value of improved lands, and secondly, the staple agricultural products, in the order of the importance which they have assumed.

The superfices of Wisconsin may be stated as follows:

Surface, exclusive of waters of Lakes Superior and Michigan,	54,000	sq. mls.
Land in acres, inclusive of small lakes and rivers,	34,560,000	acres.
Land surface as returned by U. S. Land Office,		"
Land returned for taxation, 1860,	17,341,696	"
Land in farms, Improved,	3,746,036	"
Land in farms, Unimproved,	4,153,134	"

In 1850, the amount of land in farms, was 2,975,658; of which there were

Improved, ... 1,045,499 acres. Unimproved, ... 1,931,159 acres.

Showing an increase of over 300 per cent. within the period of ten years. The aggregate of lands improved and unimproved, together with the aggregate cash valuation, and the valuation per acre for the several counties, in the two years 1850 and 1860, will appear by the annexed tabular statement:

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COUNTIES.	IN THE YEAR 1850.			IN THE YEAR 1860.		
	ACRES OF LAND IN FARMS.		CASH VALUATION.	ACRES OF LAND IN FARMS.		CASH VALUATION.
	IMPROVED	UNIMPR'VD.		IMPROVED.	UNIMPR'VD.	
Adams,	10,795	33,415	$276,230	47,404	43,442	$754 940
Ashland,	.....	.....	.....	625	14,016	140,350
Bad Ax,	.....	.....	.....	39,066	108,046	1,295,158
Brown,	5,936	45,270	287,290	10,149	25,074	305,104
Buffalo,	.....	.....	.....	13,262	43,695	448,536
Chippewa,	4,068	10,630	63,580	4,312	6,412	93,650
Calumet,	4,063	29,969	187,340	27,744	63,279	970,555
Clark,	.....	.....	.....	2,173	17,224	107,015
Columbia,	41,520	98,898	1,035,670	185,548	152,859	5,668,789
Crawford,	.....	.....	.....	9,731	31,322	378,859
Dane,	73,067	139,251	1,581,877	279,124	301,566	9,423,494
Dodge,	82,622	183,613	2,073,824	235,642	184,009	8,589,663
Door,	.....	.....	.....	2,343	14,566	93,152
Douglass,	.....	.....	.....	287	3,125	35,300
Dunn,	.....	.....	.....	7,308	20,306	209,330
Eau Claire,	.....	.....	.....	8,358	22,625	288,390
Fond du Lac,	43,712	116,268	1,249,590	225,300	127,949	6,803,384
Grant,	39,862	72,681	823,953	163,463	238,954	5,001,259
Green,	47,307	87,774	1,044,736	190,229	122,619	5,061,339
Green Lake,	.....	.....	.....	85,386	72,175	3,216,960
Iowa,	17,195	48,537	355,645	80,568	189,722	2,808,473
Jackson,	.....	.....	.....	15,263	38,780	471,490
Jefferson,	43,198	91,382	1,221,388	189,612	93,266	5,057,531
Juneau,	.....	.....	.....	24,631	61,814	697,481
Kenosha,	50,987	79,862	1,986,990	108,113	53,760	3,475,409
Kewaunee,	.....	.....	.....	23,758	87,705	1,014,520
La Crosse,	.....	.....	.....	31,189	68,983	1,641,935
La Fayette,	28,642	50,732	606,289	114,620	120,908	3,304 754
La Pointe,	110	.....	3,550	293	1,689	36,600
Manitowoc,	1,122	6,927	49,550	26,177	40,936	801,102
Marathon,	226	4,940	365	2,971	17,395	113,040
Marquette,	15,935	40,513	443,375	45,009	102,776	1,017,303
Milwaukee,	35,589	63,945	1,844,340	65,913	48,712	6,236,295
Monroe,	.....	.....	.....	25,858	58,305	1,019,155
Oconto,	.....	.....	.....	4,574	18,188	103,770
Outagamie,	.....	.....	.....	29,523	63,338	1,355,718
Ozaukee,	.....	.....	.....	63,882	54,213	2,370,375
Pepin,	.....	.....	.....	5,271	20,185	228,780
Pierce,	.....	.....	.....	13,969	42,929	533,001
Polk,	.....	.....	.....	3,159	9,623	114,890
Portage,	370	150	5,100	23,255	56,663	689,125
Racine,	63,338	82,047	1,781,703	137,161	44,569	4,297,580
Richland,	2,106	20,664	87,111	33,627	102,494	1,456,780
Rock,	143,235	137,111	3,125,841	256,309	158,567	10,909,805
Sauk,	.....	.....	.....	93,236	151,472	3,172,138
Shawanaw,	.....	.....	.....	553	1,835	29,500
Sheboygan,	13,419	62,418	616,680	107,833	117,839	3,805,650
St. Croix,	178	480	3,031	19,488	49,140	681,978
Trempealeau,	.....	.....	.....	11,509	27,130	367,240
Walworth,	116,750	149,965	3,003,119	212,898	89,384	6,778,235
Waushara,	.....	.....	.....	43,455	92,247	1,121,040
Washington,	42,963	108,335	1,321,499	115,022	109,379	3,916,598
Wankesha,	105,269	128,486	2,994,392	165,492	159,090	7,530,996
Waupacca,	.....	.....	.....	26,822	74,947	1,063,226
Winnebago,	11,915	42,289	449,930	86,161	108,223	3,958,617
Wood,	.....	.....	.....	1,403	8,661	56,800
	1,045,499	1,931,159	28,528,568	3,746,0[illegible]6	4,153,134	131,117,082

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According to these statistics the average cash valuation per acre, in 1850, was $9.50; while for 1860 the average is $16.59 per acre—a very high average, considering the fact that the unimproved are included with the improved lands, and also a rapid increase in value.

Wheat has always been the great staple crop of the State, and, in view of the remarkable adaptations of climate and soil to its production, it is probable that it will continue in the supremacy for many years to come. As early as 1849, the second year of the organization of the State, the crop amounted, in the aggregate, to 4,286,131 bushels. These figures were furnished by the U. S. census of 1850; since which time, until the year 1857—when a law was passed by the Legislature for the collection of statistics—we have no data from which to determine the ratio of progress in any of the various departments of industry.

In 1856—according to the returns by the assessors, which were very incomplete, some localities being omitted entirely—the number of acres sown amounted to 521,393; the number of bushels, 8,717,756, or a little over 17 bushels per acre. acre. The crop of 1857 was good, but only very partially reported; average 17.4 bushels. In 1858 the number of acres sown was 603,393; number of bushels, 7,029,273; the average falling to 11.6 bushels. The crop of 1859 was not reported, the law having been amended during the session of 1858 so as to require the industrial statistics to be collected only once in two years. The number of bushels is reported, however, in the returns of the U. S. census, with a copy of which we have been kindly furnished, in advance of publication, by the Hon. J. C. G. Kennedy, Superintendent. From this document it appears that 15,812,625 bushels were produced, the probable average being about 16 bushels per acre.

The annexed table will show the number of acres sown and amount produced by the several counties during the years for which we have any returns since the organization of the State:

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TABLE *showing the number of Acres and Aggregate yield of Wheat in the several Counties of Wisconsin during the years* 1849, 1856, 1857, 1858, 1859, *and* 1860.

COUNTIES.	1849.	1856.		1857.		1858.		1859.	1860.	
	BUSHELS.	ACRES.	BUSHELS.	ACRES.	BUSHELS.	ACRES.	BUSHELS.	BUSHELS.	ACRES.	BUSHELS.
Adams,	30,533	.....	.....	.....	.....	3,250	31,966	81,489	9,874	191,519
Ashland,	.....	.....	.....	.....	.....	.....	.....	150	.....	.....
Bad Ax,	.....	.....	.....	1,936	38,437	5,009	56,577	179,572	11,379	246,763
Brown,	6,212	796	12,281	.....	.....	699	6,428	21,475	2,704	71,213
Buffalo,	.....	525	1,027	.....	.....	1,497	16,480	76,267	2,064	44,611
Calumet,	7,827	1,421	29,116	.....	.....	1,331	18,358	97,024	11,476	157,579
Chippewa,	9,522	.....	.....	.....	.....	520	7,762	14,154	1,997	47,388
Clark,	.....	.....	.....	.....	.....	101	878	3,826	418	8,114
Columbia,	169,369	34,316	591,348	11,964	205,249	40,021	514,357	1,035,131	63,369	1,396,647
Crawford,	.....	769	9,562	364	6,542	2,064	24,101	35,121	5,920	111,323
Dane,	347,250	61,409	1,049,149	66,130	1,167,078	84,466	983,127	1,754,182	130,145	3,005,885
Dodge,	327,936	36,334	586,378	.....	.....	49,539	632,117	1,460,774	94,518	2,295,357
Door,	.....	8	200	23	594	26	522	3,401	59,680	1,049,400
Douglas,	.....	.....	.....	.....	.....	33	965	170	4	202
Dunn,	.....	621	9,028	.....	.....	1,502	19,180	34,664	4,348	91,250
Eau Claire,	.....	.....	.....	.....	.....	1,082	13,525	45,278	4,081	99,989
Fond du Lac,	166,918	35,228	673,497	26,814	484,113	30,040	328,417	1,233,614	76,431	1,775,365
Grant,	127,164	.....	.....	.....	.....	no returns.	.....	778,542	38,124	810,216
Green,	148,997	24,928	396,286	23,569	403,561	16,208	168,170	532,006	28,021	628,777
Green Lake,	.....	.....	.....	.....	.....	22,385	293,592	596,413	34,766	853,725
Iowa,	50,747	11,343	201,550	2,992	60,982	14,765	148,646	398,569	29,540	586,585
Jackson,	.....	789	13,353	1,596	28,266	1,787	25,293	68,137	5,814	145,096
Jefferson,	182,545	27,655	447,498	.....	.....	23,461	308,833	418,095	37,497	895,776
Juneau,	.....	1,333	22,378	1,240	18,207	3,190	80,037	72,275	8,426	187,781
Kewaunee,	.....	.....	.....	.....	.....	.....	.....	130,838	.....	.....

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Kenosha,	318,051	19,979	330,530	.....	.....	7,441	90,985	350,799	21,322	576,720
La Crosse,	.....	.....	.....	.....	.....	.....	.....	189,496	13,545	297,672
La Fayette,	63,283	14,782	262,547	.....	.....	20,101	172,512	407,989	50,190	628,186
La Pointe,	.....	.....	.....	.....	.....	3	75	14	4	110
Manitowoc,	214	2,067	38,415	.....	.....	.....	.....	43,232	6,828	135,147
Marathon,	.....	.....	.....	.....	.....	100	593	4,220	650	11,450
Marquette,	85,614	26,211	386,227	.....	.....	6,883	59,344	112,792	8,588	171,161
Milwaukee,	61,141	.....	.....	.....	.....	.....	.....	118,307	9,391	244,632
Monroe,	.....	1,481	27,806	.....	.....	2,855	29,551	111,437	9,911	195,988
Oconto,	.....	.....	.....	.....	.....	9	87	1,202	260	5,476
Outagamie,	.....	1,571	29,649	.....	.....	2,920	25,314	87,473	13,238	146,662
Ozaukee,	.....	.....	.....	.....	.....	7,343	59,424	105,147	7,524	167,415
Pepin,	.....	.....	.....	.....	.....	774	9,539	16,741	2,208	43,986
Pierce,	.....	.....	.....	2,447	49,709	2,584	42,180	80,514	7,466	174,563
Polk,	.....	.....	.....	183	3,155	325	3,463	7,310	979	16,485
Portage,	100	.....	.....	2,810	48,068	.....	.....	94,125	9,999	200,008
Racine,	218,149	17,153	272,140	12,563	206,016	16,604	162,124	309,112	30,313	948,034
Richland,	1,683	2,985	42,600	2,892	55,388	4,449	38,802	84,671	7,338	129,010
Rock,	784,278	63,576	1,072,415	.....	.....	66,866	829,186	1,389,390	9,188	2,180,584
St. Croix,	.....	746	11,256	.....	.....	2,860	46,043	109,071	6,824	148,280
Sauk,	see Adams.	.....	.....	13,446	238,723	17,880	214,468	361,028	31,870	769,515
Shawanaw,	.....	12	90	.....	.....	6	75	1,171	231	4,168
Sheboygan,	29,437	12,950	250,458	5,129	48,098	11,297	123,436	270,055	25,739	551,591
Trempeleau,	.....	417	8,197	333	10,454	1,554	22,615	52,440	4,477	104,922
Walworth,	655,704	48,983	783,292	31,616	534,219	46,781	538,245	807,165	61,642	1,676,449
Washington,	123,806	19,892	333,313	9,894	167,804	20,789	277,963	362,311	32,446	729,825
Waukesha,	312,658	35,944	599,183	.....	.....	37,244	433,631	582,012	48,694	1,246,676
Waupaca,	.....	.....	.....	4,158	56,277	5,327	48,289	96,889	8,313	170,088
Waushara,	.....	5,069	64,414	5,560	65,286	6,530	61,507	141,149	10,165	180,187
Winnebago,	57,052	9,920	172,664	.....	.....	11,307	110,596	448,292	32,753	805,114
Wood,	.....	.....	.....	.....	.....	.....	.....	903	.....	.....
	4,286,431	521,393	8,717,756	168,865	2,956,321	603,811	7,029,278	15,812,625	1,112,630	27,316,306

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It will thus appear that the crop of the past year, with a fair report of which we are provided by the returns made under the amended law, excels in every respect all the crops of wheat hitherto grown, and may with propriety be called THE GREAT CROP OF 1860. The number of acres sown was 1,112,-630.32—the yield, TWENTY-SEVEN MILLIONS, THREE HUNDRED AND SIXTEEN THOUSAND, THREE HUNDRED AND SIX AND ONE-HALF BUSHELS! from which we determine the average yield per acre to have been twenty-four and fifty-four hundredths bushels. This is not only a great crop for this State, and an immense crop independently considered, but probably the largest aggregate and the largest average yield ever yet produced by any single State in the Union.

The numerous blank spaces in the table for the years 1856 and 1857, show that the officers in some counties totally neglected the important duty of collecting the statistics as required by law, and the aggregates for those years, especially for 1857, are very much less than they should be. But after making due allowance for these omissions, it is still doubtful whether any other State of the Union, or any portion of the world, can show a corresponding rapidity of agricultural development.

The wheat grown is chiefly of the Spring varieties, although in some localities Winter wheat has been grown with quite uniform success for several years. The quality of Spring wheat is good, much of it unsurpassed. The chinch-bug has occasionally damaged the crop somewhat, but as a general rule the loss from the ravages of insects so commonly destructive in some parts of the country, has been comparatively trifling; while the rust, blight and smut, are seldom suffered to any considerable extent.

The other crops usually grown in the Northern States are cultivated in Wisconsin with success, and some of them to a large extent; still, as it regards the area thus occupied, the aggregate product and value, they are all subordinate in importance to wheat. The table subjoined shows the number of acres cultivated, in each of the more important field crops,

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during the years 1849, 1856 and 1860, together with the aggregate yield, as determined by the U. S. census and the returns of the assessors in this State;

CROPS.		1849.	1856		1860.	
		QUANTITY.	ACRES.	QUANTITY.	ACRES.	QUANTITY.
Corn,	bushels.	1,988,979	285,639	5,100,790	372,418	12,045,178
Oats,	"	3,414,672	193,609	6,312,304	336,395	13,834,937
Barley,	"	209,692	19,504	408,885	40,014	963,201
Rye,	"	81,253	15,050	220,531	89,932	1,650,998
Buckwheat,	"	79,878	7,986	118,966	14,093	240,335
Beans and Peas,	"	20,657	2,485	34,706	7,888	176,766
Potatoes,	"	1,402,077	22,858	2,318,694	1,037,650	8,713,902
Hay,	tons.	275,662	527,379	519,547	497,688	692,872

The Corn grown is chiefly of the varieties commonly cultivated in the Eastern States. The Dent flourishes and matures, however, in most localities, with as much certainty as in Northern Illinois, Indiana and Ohio. It will be observed that the average yield, per acre, for the two years, 1856 and 1860, respectively, are very nearly as 1 to 2—that of 1856 being 17.8, and that of 1860 being 34.9 bushels. This marked difference in favor of 1860 is not all attributable to improved culture, however, but rather to the fact that the first was a very unfavorable season for corn, while the last was one of the most favorable ever known in the history of the State. It is gratifying, in view of the poor system of cultivation, or rather the absence of system, to be able to present so large an average, and it is hoped that it will be remembered by the farmers of Wisconsin as an evidence of what may be accomplished when they have learned the advantages of more thorough culture.

Our limit of space will not admit of a detailed discussion of the other crops illustrated in the table. They are most of them highly creditable, in quantity, average yield and increase, for so young a State. Of the hay crop, it may be remarked that much of it was doubtless cut from the natural or marsh meadows. Though relished quite well by most kinds of stock, it is not so nutritious as hay of the tame grasses, and as fast as it can be done, the latter should be grown for at least stable use. During the past few years Hungarian Grass (*Panicum*

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Germanicum) has been cultivated to some extent, though as yet it does not stand fully approved.

The Chinese and African Sugar Cane, introduced by the State Agricultural Society and by the proprietors of the *Wisconsin Farmer*, in 1857, have been steadily growing in favor for cultivation on a small scale, until during the last year hundreds, perhaps thousands of families have manufactured enough of the molasses for their own consumption. The number of acres reported as grown the past year (1860) is 314, with a yield of 51,085 gallons of molasses, and 3,493 pounds of sugar. The quantity actually produced must have been very much greater than this.

For a discussion of the subject of fruit-growing, reference is made to the accompanying report of the Wisconsin Fruit-Growers' Association. The prospect is continually brightening, and the success of the past year will give a great impetus to this important interest. The number of bushels of apples reported by the assessors as grown in 1860, is 194,982.75. Plums, grapes, and all the small fruits, have done remarkably well. Pears, likewise, are succeeding well in the hands of careful cultivators. The cranberry grows wild in the greatest abundance and thousands of bushels are shipped every year to eastern markets.

Of miscellaneous products, the anexed table is designed to show the most important, together with the increase in amount of each since 1849 and the value of that produced in 1860:

PRODUCTS.	1849.	1860.	
	QUANTITY.	QUANTITY.	VALUE.
Clover Seed.....	483 bushels.	63,604 pounds.	$6,010 76
Timothy Seed.....	5,003 bushels.*	29,668 bushels.	53,734 64
Flax.....	68,393 pounds.	13,035 pounds.	19,776 65
Flax Seed.....	1,191 bushels.	18,063 bushels.	12,676 28
Maple Sugar.....	610,976 pounds.	825,391 pounds.	103,897 32
Maple Molasses...	9,874 gallons.	35,557 gallons.	25,349 95
Honey.....	131,005 pounds.†	245,185 pounds.	31,318 32
Wine	113 gallons.	18,545 gallons.	23,329 50
Butter	3,633,750 pounds.	10,923,826 pounds.	1,198,404 52
Cheese.....	400,283 pounds.	1,176,816 pounds.	112,139 47
Wool.....	253,963 pounds.	915,073 pounds.	331,147 95

* Including other Grass Seeds. † Including Beeswax also.

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Live Stock.—The climate, land surface, distribution of water and extensive natural meadows and prairie pastures of Wisconsin all combine to give it a large stock-growing capacity, and it is a source of high gratification that the interest of our farmers in this very important branch of husbandry is rapidly increasing. Horses, cattle, sheep and hogs, of superior quality and of the best breeds, are being introduced into almost every neighborhood, and it will not be many years, at the present rate of progress, ere the inferior breeds and animals that constituted the stock of the State ten years ago will all have been supplanted.

The breed of horses has been much improved in spirit, action, endurance and appearance by a large infusion of Morgan and Black Hawk blood, and the more recent and constantly increasing importations of thorough-breds will still further improve it. Mules deserve much more attention than they have received.

Among cattle, the Durhams and Devons have been the chief importations—the Devons of late predominating, probably owing to superior hardiness and adaptaticn to our cold winters.

For the reason that wheat-growing has so much engrossed the farmers of this State, comparatively little has been done in the raising of pork. Within a year or two, however, the low price of wheat has induced a partial correction of the unwise system of staking all in a single crop, and the interest in swine is manifestly increasing. The most popular are the Suffolk, Leicester, Sussex, Berkshire, crosses of these and grades with the common stock—the Suffolk and its crosses being rather in the ascendency.

Sheep-raising has by no means yet reached its true position in the agricultural policy of the State. With our dry, healthful winter climate, and rolling lands for grazing, wool-growing ought to take rank among the primary interests. Yet, as seen by the table on page 56, the highest amount of wool hitherto produced is less than a million pounds,—but little over three times as much as was grown 11 years ago. Depredations by dogs and the absence of factories for the supply of

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a home market are prominent among the causes of this deficiency.

The annexed table shows the number of animals in this State, of the different classes named, in the years 1849, '56, and '60:

	1849.		1856.		1860.	
	NUMBER.	VALUE	NUMBER.	VALUE.	NUMBER.	VALUE.
Horses and Mules,	30,335	Total value of Animals in '49, $5,817,563	74,834	6,379,659	127,837	6,226,079
Cattle and Calves—						
On Hand,	177,438		289,561	6,791,200	554,903	6,227,158
Slaughtered,			22,148	533,950	57,781	1,154.304
Sheep and Lambs—						
On Hand,	124,896		312,215	608,347	422,599	624,888
Slaughtered,			42,701	103,535	64,772	83,719
Hogs—						
On Hand,	159,276		177,810	662,159	406,572	1,095,688
Slaughtered,			153,746	1,654,120	248,418	2.405.212

Summary of Agricultural Values, &c.—From the foregoing statistical figures, we are enabled to tabulate the several aggregates of capital invested in agriculture, as follows:

Value of Land, in Farms, including buildings, &c.	$131,117,082
Value of Live Stock	18,550,971
Value of Farming Implements and Machinery	5,758,847
Total	$155,426,895

We are also able to determine the gross annual proceeds of this branch of industry, which may be stated thus:

Value of Field Products, proper	$27,119,608 29
Value of Dairy Products	1,311,043 99
Value of Orchard Products	155,531 05
Value of Sorghum and Maple Molasses, Honey and Wine	206,378 43
Value of Animals Slaughtered	3,742,237 55
Estimated value of Increase of Live Stock	3,702,183 00
Total proceeds of Agriculture in 1860.	$36,336,498 31

If to this grand total we add a reasonable amount for products not reported, and also make allowance for the depreciation in value of nearly everything produced by the farmer in that year, the agricultural capacity of the State, under favorable circumstances of season and times, and with the force and capacity at present employed, may be safely estimated at FIFTY MILLIONS OF DOLLARS PER ANNUM.

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MINING.

The character and locality of the most important mines in Wisconsin have already been described under the head of "mineral deposits." The condition of mining as a branch of industry, was also incidentally considered; so that a further discussion is hardly necessary in this connection.

Lead Produced.—The annexed table will show the quantity of the ore raised and smelted, so far as can be ascertained from the statistics collected under the law of the State. It should be remarked, however, that these statistical returns were imperfectly made and by no means present the full aggregate produced during the years enumerated. For some of the years, statistics are entirely wanting.

In 1850, about.....	26,200,780 lbs.	In 1856, about.....	22,706,700 lbs
" 1851, "	22,125,870 "	" 1857, "	——— "
" 1852, "	19,135,973 "	" 1858, "	——— "
" 1853, "	19,871,820 "	" 1860, "	22,000,000 "

Iron Produced.—The iron statistics are even more incomplete than those pertaining to lead. The amount (in "pigs") produced in 1857, was reported at 5,000,000 pounds; in 1859, 5,274,000; since which time the amount has not materially varied.

The copper mines have furnished so little information of a reliable statistical character, that it is hardly safe to make any statement as to the amount they have yielded or are yielding at the present time.

In conclusion, it may be remarked of the mining interest generally, that it promises much larger returns than have hitherto been realized. Capital and enterprise are alone wanting to make the mines of the State productive of an immense revenue.

LUMBERING.

The lumbering business likewise holds an important rank among the leading industrial interests of the State. For many years the ceaseless strokes of the lumberman's axe have been heard in all our great forests, and still those forests seem almost as inexhaustible as they did ten years ago.

The statistics for the past year (1860) are as follows:

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NAMES OF COUNTIES.	LUMBER SAWED.		SHINGLES MADE.	
	FEET.	VALUE.	THOUSANDS.	VALUE.
Ashland,	140,000	$840 00	.....	.....
Adams,	692,000	3,728 00	439	$690 00
Bad Ax,	1,457,000	12,790 00	283	566 00
Brown,	3,210,000	20,250 00	6,848	14,625 00
Chippewa,	13,810,000	83,700 00	2,000,433	906,000 00
Columbia,	835,000	30,300 00	.....	.....
Crawford,	2,149,000	14,432 00	647	1,335 00
Dane,	355,000	26,830 00	.....	.....
Dodge,	3,257,000	26,724 00	98	626 00
Door,	1,000,000	59,000 00	128	312 00
Douglas,	1,930,000	13,510 00	1,787	3,574 00
Dunn and Dallas,	19,600,000	169,700 00	103,300	19,500 00
Eau Claire,	14,270,000	140,900 00	3,500	8,050 00
Fond du Lac,	30,312,000	197,981 00	28,006	46,509 75
Grant,	482,000	3,690 00	.....	.....
Green,	210,000	4,200 00	.....	.....
Iowa,	6,080,000	4,804 00	.....	.....
Jackson,	10,448,000	56,030 00	2,670	5,440 00
Jefferson,	8,450,000	63,800 00	80	101 00
Juneau,	13,842,000	111,591 00	2,071	3,979 00
La Crosse,	8,715,000	87,150 00	9,200	15,000 00
La Fayette,	155,000	1,955 00	.....	.....
La Pointe,	431,000	2,960 00	310	640 00
Manitowoc,	12,996,592	79,405 00	6,606	2,907 06
Marathon,	15,505,075	75,570 37	4,013	4,741 70
Marquette,	700,000	2,000 00	.....	.....
Milwaukee,	660,000	15,150 00	.....	600 00
Monroe,	3,124,700	10,219 00	588	1,150 00
Oconto,	96,500,000	480,000 00	1,800	4,050 00
Outagamie,	2,253,830	16,028 00	75,700	48,625 00
Ozaukee,	847,050	38,643 00	.....	.....
Pierce,	1,195,000	12,150 00	600	1,350 00
Polk and Burnett,	1,400,000	8,500 00	275	1,025 00
Portage,	23,350,000	47,375 00	4,190	5,947 00
Racine,	11,000	13,020 00	3,000	19,500 00
Richland,	527,000	3,961 00	97	247 00
Rock,	1,206,000	30,000 00	.....	.....
St. Croix,	563,300	6,300 00	.....	.....
Sauk,	2,761,000	26,440 00	4,166	292 00
Shawanaw,	435,000	2,420 00	62	124 00
Sheboygan,	4,115,084	25,226 00	449	674 00
Trempeleau,	820,000	3,915 00	150	400 00
Walworth,	520,724	6,170 00	75	225 00
Washington,	2,990,000	11,867 00	.....	.....
Waukesha,	1,445,000	68,900 00	30	150 00
Waupacca,	2,450,000	20,000 00	3,060	6,069 00
Waushara,	968,000	6,034 00	200	400 00
Winnebago,	36,890,000	216,400 00	6,205	9,410 00
	355,055,155	$2,362,558 37	2,272,061	$1,134,834 51

The counties of Buffalo, Calumet, Clark, Green Lake, Kewaunee, Kenosha, Pepin and Wood made no report, and are, therefore, not included in the table.

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It will be observed that the foregoing table furnishes simply a statement of lumber manufactured, no account being made of the immense number of logs annually rafted out of the State for manufacture elsewhere.

The hard-wood districts described on page 47 have furnished and still continue to yield large quantities of timber for rails, barrels, wagons, and various kinds of cabinet and other wooden wares, as, also, for the building of ships; but the larger part of the lumber manufactured comes from the pineries. These may be divided naturally enough into the North-western Pinery—embracing the region occupied by the Chippewa, Black, St. Croix, and other rivers flowing into the Mississippi—the Wisconsin Pinery, on the Wisconsin River, the Wolf River Pinery, and the Green Bay Pinery, all of which are sufficiently localized by the names they bear.

During favorable seasons, and in times of fair prices, these several pineries employ 5,000 to 8,000 men, and yield half a thousand million feet of lumber and three or four million bunches of shingles, with an aggregate value of over $5,000,000 per annum.

MANUFACTURING.

This branch of our industry has not yet assumed the importance it deserves. Richly endowed with all the materials—minerals, timber and agricultural products—required for a varied and profitable business of manufacture; provided also with an abundance of the best water-power on the continent, and with ready means of transportation of both the raw material and the manufactured product, Wisconsin would seem to have been designed to take a high rank among the manufacturing States of the Union.

It will nevertheless appear, from the statistics reported to the Secretary of State for the year 1860, that the whole valuation of manufactured articles but little exceeded eight million dollars. It should not be forgotton, however, that there is done a large amount of manufacturing of the articles enumerated on so small a scale as to have escaped the officers who

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collected the statistics; while, again, there are many articles manufactured in the State, the names of which do not appear on the assessors' blanks. The following are some of the leading articles, with their quantity and cash valuation:

ARTICLES.	QUANTITY.	VALUE.
Agricultural Implements and Machinery	.....	$590,269
Wagons	7,454	449,410
Cabinet ware	.....	402,326
Wood and Willow	.....	329,755
Pig Iron	381,000 lbs.	.....
Castings	.....	133,096
Pig Lead	.....	188,880
Shot and other Leaden Manufactures	.....	84,459
Copper Manufactures	.....	960
Earthen Ware	.....	37,400
Drain Tile	113,500	2,290
Lumber	355,055,155 feet.	2,362,558
Shingles	2,272,061 M.	1,134,834
Leather	.....	146,177
Boots and Shoes	299,354 pr.	715,169
Woolen Fabrics	116,561 yds.	76,458
Cotton Goods	34,406 "	15,434
Paper	97,360 rms.	143,565
Wine	18,545 gals.	23,329
Whisky	1,275,888 "	196,146

If to this list we were to add the manufactured products of the hundreds of flouring mills, brick-yards, safe and lock factories, tin shops, iron brass and type foundries, match, soap and candle factories, breweries, &c., &c., it is probable that the aggregate valuation would rise to more than quadruple the amount above named; the estimated value of articles manufactured in Milwaukee alone having been estimated at $10,000,000 per annum in prosperous times.

Next after Milwaukee, Janesville, Beloit, Whitewater, Neenah and Menasha, Appleton, Depere, Green Bay, Two Rivers and Racine, rank first among the manufacturing towns.

COMMERCE.

The commerce of the State cannot be better illustrated within the brief space alloted to it here, and in the absence of full statistical information, than by showing, in a general way, the amount of business done by two or three of the principal ports.

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Milwaukee is the metropolis of Wisconsin, and at the same time occupies a proud position among the commercial cities of the Great West. Her numerous railroads, radiating into all parts of the country, constitute her a natural focus for the immense trade of that portion of the North-west lying North of latitude 42° 40′; and her harbor—one of the best on the lakes—opens for her shipping a direct communication with the great markets of the New and Old World. In some departments of trade her commerce is already worthy of an Atlantic city. The grain trade of Milwaukee is especially deserving of notice. Her local position is such as to make her the natural shipping port for Wisconsin, Minnesota and Northern Iowa, and the superiority of the wheat grown in this portion of the North-west, as compared with that produced on the ill-adapted soils of the Prairie State, has also secured to her much of the grain grown in Northern Illinois, despite the proximity of Chicago.

Her warehouses have a capacity for the storage of over 1,800,000 bushels and are furnished with facilities adequate to the shipment of 320,000 bushels per diem. But even this capacity, great as it is for a young city in a new country, is unequal to the demands of the grain trade in a productive season, and other storehouses are being erected.

The year 1860, on the trade of which our statistics are based, may, at first thought, appear exceptional rather than representative, but when it is remembered that the moderate demand in the eastern markets and the low price paid for wheat during that year had the effect to keep back one-half or two-thirds of the whole amount intended for sale, the aggregate of bushels received and shipped within the year will doubtless be regarded as nothing more than a fair average.

Of Wheat, the total amount received during said year was 9,108,458 bushels; of which 8,144,094 bushels were received by the several railroads, 71,458 bushels by lake, and 892,906 bushels by teams.

The aggregate would undoubtedly have been much larger had the carrying capacity of the grain vessels of the port been

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greater. The lowest price during the year was 65 cents; the highest, $1.15; the average, 95½ cents.

The total of shipments of wheat for the year was 7,568,608 bushels; 5,085,112 of which went to Buffalo, 1,651,282 to Oswego, and the remainder to various ports, including Ogdensburgh, Kingston, Collingwood, Montreal, and other Canadian cities.

The Flour trade is rapidly increasing — the receipts of the past year amounting to 597,118 barrels, including 202,810 barrels manufactured in the city mills. Average price paid, for the year, $4.76¾ per bbl. Total of shipments, 457,543 bbls.

The receipts and shipments of oats, corn, barley and rye, are concisely exhibited in the following table:

Kind of Grain.	Receipts.	Shipments.
Oats,	178,963 bush.	64,682 bush.
Corn,	126,404 "	37,204 "
Barley,	109,975 "	28,056 "
Rye,	52,382 "	9,735 "
Total,	467,544 bush.	139,677 bush.

The receipts of Grass Seed (chiefly Timothy) amounted to some 15,000 bushels; the shipments to 10,204.

Wool is, as yet, not grown in the North-west to an extent to warrant the expectation of large statistical figures. The shipments in 1860 amounted to 659,375 lbs.

The Hide trade is quite an important branch of business; the receipts being 85,000 in number during the year; the shipments, 32,941.

The Provision business is not immensely large, but is growing in importance. The following table exhibits the receipts and shipments of some of the leading articles for the year:

Articles.	Receipts.	Shipments.
Beef Cattle, little less than	10,000 head.	21,390 bbls.
Tallow,	1,253,250 lbs.	.....
Hogs,	59,790 head.	28,019 bbls.
Butter,	889,025 lbs.	814,630 lbs.
Eggs,	3,679 bbls.	2,254 bbls.

The trade in Malt and Spirituous Liquors is very extensive. We have no means of knowing precisely what quantities of

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Highwines and Alcohol have been shipped; but the exports of Beer and Ale are stated at over 12,000 bbls.; those of Whisky about 30,000 bbls.

Of Salt 82,338 bbls. were received, and 59,079 bbls. sold.

The Lumber trade for the year 1860 was not so extensive as in former years; at least the receipts were not so great—being as follows: Of Lumber, 31,897,381 feet; Lath, 1,119,000 feet; Shingles, 12,313,500 in number. The shipments for the same period were about one-third less than the receipts. Even this is an extensive business; but in 1857 the receipts of Lumber alone amounted to over 71,000,000 feet.

The wholesale trade in Dry Goods, Groceries, Iron, Hardware, &c., has always been creditable, but is now assuming great magnitude and importance. Immense quantities of goods of every description have been sold the past year to lesser jobbers and retail dealers not only throughout Wisconsin, but also in Northern Iowa and Minnesota.

Of the numerous and less important branches of trade we have not room to speak.

The receipts and shipments by railroad and lake amount to many millions per annum.

The amount of foreign imports and exports for a number of years past, together with the amount of revenue collected thereon for the eight years from 1853 to 1860, inclusive, is shown in the following statement, kindly furnished by Hon. C. L. Sholes, Deputy Collector for the port of Milwaukee. For the years prior to 1853 there are no returns and books in the Collector's office.

AMOUNT OF REVENUE COLLECTED.

From May 1 to Dec. 31, 1853,	$11,118 02
" January 1 to Dec. 31, 1854,	54,601 93
" January 1 to Dec. 31, 1855,	142,504 50
" January 1 to Dec. 31, 1586,	155,128 42
" January 1 to Dec. 31, 1857,	137,263 05
" January 1 to Dec. 31, 1858,	48,424 09
" January 1 to Dec. 31, 1858,	17,999 45
" January 1 to Dec. 31, 1860,	2,064 51

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TONNAGE EMPLOYED IN THE MILWAUKEE TRADE.

[No return on file for 1850.]

In the year 1860,.....1,290,175 tons of vessels arrived.
" " " .....1,292,150 " " departed.

TOTAL VALUE OF IMPORTS,

From May, 1853 to Dec. 31, 1860,..... $33,592 free goods.
" " " " ..... 142,275 dutiable goods.

TOTAL VALUE OF EXPORTS,

During the same period,..... $2,327,643

Racine and Kenosha are also towns of considerable commercial importance. They both have good harbors and are supplied with railroads which directly connect them with the interior and with the Mississippi. Large quantities of wheat and other agricultural products centre there for export and a vast amount of timber, shimgles and lumber of various kinds, together with the ordinary articles of merchandise are annually imported. In 1851, the total imports and exports of Racine were $2,507,715; ship arrivals, 1462. The arrivals of Kenosha for the same year are 730; total of exports and imports, $2,629,334. Since that time they have had a steady commercial growth, and their trade now amounts to

On the lake shore north of Milwaukee several flourishing towns are fast becoming ports of considerable importance. Their exports at first consisted chiefly of lumber in its various forms, shingles, staves, &c.; but the rapid agricultural development of the section of country of which they are the outlets, has furnished them them with a large amount of grain and other agricultural products. Ozaukee, Sheboygan, Manitowoc, Two Rivers, and Green Bay, are referred to. The total of their exports and imports ranges from two to ten millions each.

Of the inland and river towns which deserve mention among the commercial towns of the State, Oshkosh, Berlin, Portage, Prairie du Chien, Prescott and Hudson are prominent.

INTERNAL IMPROVEMENTS.

The internal improvements of Wisconsin have already assumed considerable magnitude and are every year becoming more extensive. The system of railroads, as projected, is very

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complete and in the course of a very few years, at the past and present rate of progress, will open every important agricultural, mining and lumbering district to the principal ports and shipping points on the lakes and on the Mississippi. The surface of the country is such that they are very cheaply constructed, and the immense and rapidly increasing carrying business must eventually insure to all judiciously located and well-managed roads large profits on a fair cash valuation. The total length of railroad track in actual operation in this State is 943 miles. The name, length within the State, cost, amount of indebtedness and amount of business done in 1860, as reported to the Secretary of State, will be found in the following table:

NAME OF ROAD.	LENGTH IN OPERATION WITHIN STATE.	COST OF ROAD.	INDEBTEDNESS.	BUSINESS OF 1860.	
	MILES.			REC'D FOR TRANS. OF PASSENGERS	REC'D FOR TRANS. OF FR'T & MAIL.
Milwaukee & Chicago.....	40	$1,833,695	$868,202	$81,371	$59,825
Milwaukee & Mississippi.	234	8,135,674	4,932,521	174,215	589,465
Mil., Wat. & Bar. Val.....	76	1,520,478	1,608,838	27,411	171,183
Milwaukee & La Crosse...	200	.....	.....	329,485	511,353
Milwaukee & Horicon.....	37	.....	.....	.....	.....
Kenosha, Rock'rd & R. I.	28	898,808	501,304	1,768	4,719
Racine & Mississippi.....	68	.....	1,092,922	.....	136,776
Chicago & North Western	104	10,307,037	7,610,526	240,734	431,826
Beloit & Madison.....	16	.....	.....	.....	.....
Mineral Point.....	28	.....	.....	.....	.....
Fox Lake.....	2	15,000	.....	1,088	1,874
Sheboygan & Mississippi.	20	826,977	.....	3,961	5,593
	943	$23,539,689	$16,614,316	$860,338	1,928,265

It will be observed that roads with a total length of 349 miles are not reported in the cost column of the above table. Were they included the agregate would be something over thirty-seven millions of dollars, instead of twenty-three, with an average cost of $39,629 per mile.

The map accompanying this report presents only those lines which are in actual operation. It may be remarked, however, that several of them are in progress of extension, and that numerous projected lines will be undertaken immediately on the retnrn of prosperous times.

Next to this net-work of railroads, the Fox and Wisconsin

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Improvement is worthy of consideration. Early in the history of the Territory of Wisconsin, the near approach of the two rivers, Fox and Wisconsin, at Fort Winnebago (now Portage City), attracted the attention of shrewd observers looking to the future rapid development of what was destined to become a great State. There were these two noble rivers — one flowing from the inexhaustible pineries of the North, and emptying into the Mississippi; the other making its way through a rich grain-growing district, uniting its waters with those of the yet larger Wolf at Oshkosh, and emptying first into Lake Winnebago and then into Green Bay. Both were navigable for small steamers, and the construction of a canal a mile or two in length at Portage, and a few locks on the Lower Fox, (that portion below Lake Winnebago), would open a channel of uninterrupted steam navigation between the Father of Waters and the chain of Great Lakes. So important a work as this could not long remain unattempted. It did not. Congress was petitioned for a grant for the purpose of aiding in the execution of the enterprise, and in 1846 donated some 306,-039 acres for that purpose; in 1854, by construction of grant, 109,919 acres more, and in 1855, by a yet more liberal construction, additional acres to the number of 268,909.

The work was first undertaken by the State, but subsequently handed over to the "Fox and Wisconsin Improvement Company." The canal uniting the two rivers was cut in 1852, and in 1856 the locks were so far constructed that navigation on the Lower Fox was opened from Green Bay to Lake Winnebago. The total cost of the improvements up to 1860, was $1,193,933.97; the indebtedness of the company is some $160,000, and 440,268 acres of the land still remains unsold. With the return of prosperous times, these lands will have a ready sale, and then the perfection of this great work of improvement will be speedily attained.

Since 1856, the work has been confined to the Fox, and the navigation of the Wisconsin has been practically suspended. The construction of side dams at a few points where the channel is broad and shallow will be required when navigation is

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again resumed, but otherwise the hindrances are not serious. The shifting of sand-bars will always be an embarrassment to some extent, but continuous navigation would doubtless very materially diminish that objection.

During the season of 1858, as appears by the report of the Superintendent of the Company, the navigation of the Fox opened on the 12th of April, and closed on the 27th of November, and the actual trips of steamboats between Lake Winnebago and Green Bay, alone, was 550. The amount of freight both ways was 18,705 tons; the number of passengers, 7,312.

Transportation is of course much cheaper by this route than by rail, and during the past year the amount of grain from the fertile lands of the central counties, of lumber from the upper Wolf, of flour, &c., from the numerous mills at Neenah and Menasha, of wagon work and wooden wares from the factories at Appleton, Depere and other points, and of articles of various kinds from numerous points all along the route, must have been very great.

Daniel C. Jenne, Superintendent of the Improvement, in the report referred to above, draws the following comparison between it and the Erie Canal:

"This channel of commerce, at some future day, must be to this State, to a great extent, what the Erie Canal has been to the State of New York; and whoever looks at it with an impartial eye, must come to this conclusion. The capacity of the Improvement will excel that of the enlarged canal. * * * Our locks are 160 feet by 35, while those of the canal are only 110 by 18 feet. We can use boats 144 feet long by 34 feet wide, while they can use boats only 97 feet long and 17½ feet wide. We use steam power altogether, and can run our boats 5 to 10 miles an hour, while they use horse power, and average only 1½ miles an hour."

In 1852, Hon. P. D. Andrews, in his report to Congress on Colonial and Lake Trade, says, in referring to this subject:

"The junction of the Wisconsin and Mississippi rivers is, in fact, by this route, brought nearer to the lakes than St. Louis, and the transportation of goods being by an uninterrupted line of steamboat navigation, throughout the whole chain of lakes and across the State of Wisconsin, the trade to be one day transacted by this route will be enormous."

Again he remarks:

"By this line there is an uninterrupted steam communication from Buffalo

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Oswego and Ogdensburgh, or the Canadian cities, and the mouth of the St. Lawrence, to St. Louis, New Orleans, and the Balize.

"This is certainly indicative of a new era in the practice of inland navigation, as it will open at once an easy and direct communication between New York and the new States of Wisconsin and Iowa, and the Minnesota Territory, render any of the above named points on the Mississippi river easier of access by way of the lakes than St. Louis itself.

This line of communication brings the lead mines of Galena nearer by a hundred miles to the lakes than to St. Louis, and to it ultimately all the hidden wealth of the upper Mississippi valley—incalculable in its amount, and apparently inexhaustible—must become tributary, inasmuch as for the transmission of heavy freight and produce, this is the easiest and most direct, and therefore the cheapest channel."

These results have not all been realized yet, but the reasons for believing that they may be a part of the future history of the State are no less valid now than they were eight years ago.

The other public improvements—embracing harbors, State and plank roads, bridges, State and United States buildings, &c., &c., are of a character highly creditable to so young a State as Wisconsin, and a most cheering earnest of what may be expected when another decade shall have been added to her history.

INDUSTRIAL ASSOCIATIONS.

One of the most hopeful signs of the times, industrially considered, is the growing disposition on the part of the industrial classes to associate themselves together for mutual improvement and the more rapid progress of the arts to which they are severally devoted. Among the professional and commercial classes, societies, associations and clubs, have been common enough from time immemorial; but industrial associations are entirely a modern improvement. It is to this circumstance that we may attribute, to a large extent, the slow progress of Agriculture and the Mechanic Arts from the time of their early origin down to the present century.

Being in closer proximity, in the cities where their arts are chiefly practiced, it was natural that mechanics of various kinds should have been first of all the producing classes to avail themselves of this potent means of advancement; and on the other hand, it was equally natural that the farmer, who is necessarily

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separated somewhat from his neighbors, should rather incline to isolation, to a sort of selfish independence and to a reliance upon his own experience and upon the experience of his ancestry in direct lineage, and thus shut out not only the inovation of other men's ideas, but also the liberalizing influence of neighborly association.

This blindness of the past is giving way, however, before the light of demonstrable science, and Agriculture, so long left to grope in darkness, is fast becoming one of the most liberal and progressive of all the arts. The farmer has found that there is advantage is knowing the experiences and the discoveries of other men engaged in the same pursuit, and he is, therefore, not only willing, but is even becoming anxious to avail himself of those experiences, of the improvements in the Mechanic Arts, and of the numberless applications of science. It is this increasing liberality among agriculturists which has given origin to so many societies, town, county, state, and national, within the past twenty years; and it is these societies, in turn, that have given such an impetus to the work of agricultural improvement, and within the brief period of a single generation, placed this noblest of the arts upon a higher plane of dignity and honor.

At present, every State in the Union — at least every Northern State — has its agricultural societies in operation, and the work of organization is still going on, with so much of spirit and enterprise, that it will not be long until every county and town will have its association.

In 1851 the number of County Societies in this State was 9 — Columbia, Dane, Iowa, Kenosha, Racine, Rock, Sheboygan, Walworth and Waukesha being the counties in which they had been organized up to and including that date. Several of these declined, remained in abeyance for a number of years, and were again called into vigorous action. There are now 37 societies in active operation, many of them provided with exhibition grounds and buildings, and, with scarcely an exception, all are doing a most important work for the industry of their respective counties.

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The limitation of space and the plan of this volume will prevent any detailed account of the proceedings for the year 1860 in pursuance of the arrangement adopted in the making up of previous volumes, but a tabular synopsis of the returns made to this office for the year will be found on pages 356–7. In some of the counties which apper in blank, societies have been organized, but report was neglected to be made. The standing annual appropriation of $100 to each society holding a fair and complying with the law in the making of a report to the Secretary of State and to the Secretary of the State Agricultural Society, is found to be a great help in all the new counties, and in a number of cases has resulted in a valuable organization, which otherwise would probably have been deferred for years. It is believed that the same amount of money could not be more wisely appropriated.

There have likewise been organized within the past few years, numerous town clubs for the discussion of practical questions relating to Agriculture, Horticulture, and the Mechanic Arts. The meetings are held monthly or semi-monthly, and then published reports in the newspapers of the State, together with the improvement perceptible in the localities where they are held, afford evidence that they are accomplishing great good.

In several of the larger towns and cities, horticultural societies have been organized, and their utility is decidedly manifest in an improved taste for ornamental gardening, and in the better success which now attends a more general effort for the cultivation of fruits. The Wisconsin Fruit-Growers' Association has accomplished very much in this direction. Its annual report will constitute a part of this volume, and can hardly fail to be read with interest and profit.

The only independent joint stock association, with the general advancement of industry as its object, is known as the Wisconsin Agricultural and Mechanical Association. It was incorporated in the winter of 1859–'60, and is located at Milwaukee. A brief account of its objects and history will be included in this volume.

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The Wisconsin State Agricultural Society was organized at Madison in March, 1851, since which time it has continued in the active and uninterrupted discharge of its important functions, as the guardian of the industrial interests of the State. Its annual exhibitions and pnblished volumes have awakened an interest in agricultural improvement, diffused a large amount of valuable information among the people, stimulated all branches of industry to the attainment of a higher degree of excellence, and thus materially advanced the "condition of Agriculture, Horticulture, and the Mechanic, Manufacturing and Household Arts," while, at the same time, it has served to give to our young State a creditable industrial position among the enterprising States of the Union.

Since its organization it has held nine annual exhibitions, awarded and paid a little less than $20,000 in premiums, distributed large quantities of valuable seeds and cuttings, collected a valuable library, and published, including the present, six volumes of Transactions. The following is an exhibit of the place and date of Fair, the whole number of entries, the amount paid in premiums, and the whole receipts and expenditures for the several years since 1850:

YEAR.	PLACE AND DATE OF FAIR.		NUMBER OF ENTRIES.	FINANCES.		
	PLACE.	DATE.		AM'T PAID IN PREM'S.	TOTAL RECEIPTS.	TOTAL EXPEND'URES
1851..	Janesville.	Oct. 1st to 3d.	461	$140 00	$570 81	$484 86
1852..	Milwaukee	Oct. 6th to 9th.	1,329	876 04	2,748 45	2,714 63
1853..	Watertown	Oct. 5th to 8th.	717	415 00	2,424 37	2,541 17
1854..	Milwaukee	Oct. 4th to 7th.	1,060	1,137 00	5,688 00	5,522 78
1855..	Milwaukee	Oct. 3d to 6th.	1,231	2,015 00	7,542 95	6,433 29
1856..	Milwaukee	Oct. 8th to 11th.	1,778	2,355 00	8,379 63	7,411 01
1857..	Janesville.	Sept. 28 to Oct. 3.	1,669	2,701 11	8,804 63	8,302 10
1858..	Madison.	Oct. 4th to 8th.	2,119	2,641 00	11,795 90	10,456 46
1859..	Milwaukee	Sept. 26 to Oct. 1.	1,640	2,845 00	11,637 07	10,758 26
1860..	Madison.	Sept. 24th to 29th.	2,008	3,027 25	13,737 81	13,736 84

Had the Fair a permanent location, the annual expenditures might be very considerably diminished, as the cost of newly fitting up grounds for the purposes of the Exhibition from year to year, amounts to several thousand dollars, to be deducted from the receipts of each Fair. But, on the other hand, the Society has not the means to purchase suitable grounds; and if

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it had, it is questionable whether the present mode of holding the Fair in different portions of the State, from time to time, does not enable the Society to reach a larger number of persons within a given period and thus accomplish more than it otherwise could for the objects which it was established to promote.

The Society has now an extensive correspondence with other associations of like character in this country and Europe, and through its published Transactions is doing much to bring our young but nobly endowed Wisconsin into favorable notice in both the New and the Old World, while at the same time, and by these very means, it is enabled to secure a series of valuable exchanges, embodying the industrial experiences, improvements and discoveries of all other countries. It has to be regretted that the State has not evidenced a more thorough appreciation of the value of such a system of exchanges, and thus made a standing provision for the regular, uninterrupted and prompt publication of the Society's Transactions from year to year.

The resources of the State, its rapid development, and present industrial condition, are of a character to insure a large influx of population and capital; and when it is remembered that the publications of this Society afford the only information of an authoritative character, upon this subject, now emanating from the State, it would seem but the dictate of a provident self-interest, that these publications should be kept up from year to year, and that they should be offered to the public in a respectable and attractive dress.

The Annual Exhibition of 1860 was, all things considered, the best ever held in this State, and although the necessity to make the receipts of that one year cover the greater part of the expenses of two years has embarrassed the treasury somewhat, it is believed that another successful exhibition will place the Society upon better financial ground than it has ever enjoyed hitherto. A detailed account of the Fair, together with the proceedings of the Executive Board, and the Fiscal Report of the Treasurer, will be found in their appropriate place in this volume.

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INDUSTRIAL WANTS OF WISCONSIN.

The industrial needs of the State have been incidentally considered in the discussion of "Industrial Condition;" but it may, nevertheless, be well to give them in this place a more positive statement in the form of a connected summary, leaving their elaborate discussion for subsequent reports.

THE AGRICULTURE OF THE STATE NEEDS,

First, a recognition of the possible exhaustion of its fertile soils. The fallacy of supposing them capable of continuing, for an unlimited period, to yield immense crops of grain with but little co-operation on the part of the husbandman is held —at least practiced upon—by our farmers, in common with those of the other Western States, and it is feared that the great crops of the past year may have a tendency to confirm them in this serious error. If we would improve rather than deteriorate our soils, the farmers of the State must learn:

1. To rotate their crops. There is no soil that will yield as good returns, through a long succession of years, when cropped without change, as if cultivated with a judicious system of rotation.

2. To practice, as far as possible, the economical drainage of their lands. It will doubtless be years before thorough drainage, such as is common in the old world and is beginning to be common in some of the older Eastern States, will be practicable here. Still, an appreciation of the advantages of a warm, dry and well-aerated soil would lead to more general better preparation of our soils in this respect.

3. To save and apply their manures. The building of barns in locations where the manures must be washed down and irretrievably lost, the moving of barns to *get rid* of the inconvenience of miry accumulations, and the burning of straw stacks, have been practiced to a shameful extent and are yet but too common. Let our farmers faithfully attend to this matter of restoring to their lands as much as possible of what they remove in the crops grown, and also when practicable avail themselves of the rich supplies of muck, marsh mud,

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marl, and gypsum, with which Providence has so generously furnished them, and the ordinary crops of the past will be but fractional parts of what they may produce.

4. Our farmers must learn the economy of deeper and more thorough cultivation. The drouth of 1859, which had the effect to bring up large quantities of needed minerals from the subsoil to the surface, and the consequent great yield of 1860 should not have failed to teach them this important lesson.

5. They must learn the imperative necessity of a more correct balance between the cultivation of grain and the growing of stock. The adaptation of our soils to the growth of wheat, and the little labor requisite in all the prairies and openings to its easy production, have led our farmers to the adoption of a one-sided policy. No soil can be permanently kept fertile without manure, and manure, in turn, requires stock for its production. Stock, moreover, furnish a home market for much that is grown and would otherwise be entirely lost or sold at unremunerative prices. Beef, pork, butter, cheese and wool are articles which bear a better price in proportion to cost of transportation, and, if produced in fair proportion, will often relieve the farmer from the embarrassment consequent upon a partial failure of his wheat crop, or its serious depreciation in market value.

Secondly, the Agriculture of Wisconsin needs a more universal and thorough realization on the part of her citizens, of the relative magnitude of that branch of our industry as a State and of the importance of fostering and aiding in its development by every legitimate means within the power of the government. It is deplorably true, that it is not practically so regarded, and that in face of the undeniable fact, that about five-sixths of our population are engaged in agricultural pursuits, that nine-tenths of all our revenue is derived from that source, and that our prosperity as a people and our position as a State pre-eminently depend upon its success as the paramount interest. And the result is, that legislation of a favorable character is to-day obtained with more difficulty for this, than for almost any other real or imaginary interest of the common-

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wealth. This should not be so, and we cannot rationally hope to attain to the rank to which we are entitled, as an agricultural community, until this radical error is corrected.

THE WANTS OF THE MINING INTEREST,

As already suggested under the head of "Mining," are chiefly those of information,—derivable only through a more thorough exploration and survey of the mines,—of capital for their economical working and the manufacture of their products, and of a system of scientific and statistical records for use in the mines and for publication in permanent form by the State.

THE MANUFACTURING INTEREST

Needs, above all things else, a recognition, on the part of the State, of its great importance as a branch of our industry. Wisconsin has, again and again, been styled pre-eminently agricultural; and so it is. But it is none the less true, that it may become a manufacturing State. Indeed there is scarcely a State in the Union which possesses superior natural advantages in this respect.

As before remarked, we have immense stores of mineral—lead, iron, zinc and copper—susceptible of the most economical mining and preparation for manufacture. In many districts there are almost inexhaustible supplies of timber of the best quality and of the varieties mostly required in the arts. Our soils are adapted to the growth of flax and other staples used in the manufacture of cloth, cordage, &c., and to the supply of an immense home demand, with a large surplus for exportation to other States and foreign countries. Nature has provided us moreover, with any amount of the most available water power. And finally, our State, surrounded on all sides but one by great navigable waters, is at the same time, to a very unusual extent, supplied with natural internal channels for the easy transportation of all the products of Agriculture, the Mining and the Mechanic Arts to those great boundary waters which directly connect us with all the markets of the new and old world.

What more could providence do for us than has been done!

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what clearer indication give of our destiny as a State and of the means to be employed for the fulfillment of that destiny?

A people may live and flourish on Agriculture alone; even though a large proportion of the products of the soil must be shipped to distant markets; instances are not wanting to prove this. But it is nevertheless demonstrable that a home market for such products is more desirable, and that a country so rich in the economical minerals and timbers must find it more profitable, so long as the means are at hand, to do its own manufacturing and thus save to itself not only the profits on the business of manufacture, but likewise that dead loss which now comes of the transportation of much useless material and the re-transportation of the manufactured article from distant portions of the country for the use of its now merely agricultural, mining and lumbering population.

Millions of dollars are lost every year to the farmers of Wisconsin by their remoteness from the great grain markets. They work like heroes to produce their immense crops of wheat and then practically give to ship owners and transportation companies three-fourths—if not, indeed, a larger proportion—of all the profits of their toil. But this is not all: after selling their wheat for less than it cost, they then buy back of Eastern manufacturers, their cloths, leathers, hardware, paints, oils, &c., &c., at a price including cost of manufacture, profits on handling by the wholesale dealer, cost of and profits on transportation, and lastly the profits of the retailer at home. What they need, therefore, is that New York be brought to their doors; and this to a considerable extent, can be practically accomplished by the establishment of factories where wool, flax, flax-seed, hemp, &c., could find a market; where a large amount of the breadstuffs now exported might be sold for consumption by the operators, their families and the large population which would naturally cluster about extensive manufacturing establishments, (and which, as time advances, would make large and flourishing villages and cities in the manufacturing districts,) where also many of the substantial articles essential

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in domestic life could be purchased at New York prices, the cost of double transportation deducted.

To a still greater degree is it true, that the lumbering and mining districts suffer loss, since the cost of transportation of the raw materials to the factories in the East, and of the manufactured articles back again is necessarily heavier than for most other articles.

The question of means, therefore, is really the only one that requires to be settled.

The building of factories, and the furnishing them with machinery, &c., necessarily involves heavy expenditures, and consequently none but men of heavy capital, and corporations with large means in the aggregate can engage in the business. Nor will men of this class invest their money in manufacturing so long as the attractions of other branches of industry and of speculation in real estate are so much greater. Money has no endowment of either conscience, patriotism or philanthropy and usually goes where it can increase its gains most rapidly and surely; it will not be forced.

It is clear, accordingly, that if we would induce the investment of capital in the manufacturing business, we must adopt some course which will make it relatively profitable. It is our opinion that the Executive of the State, in his late Message to the Legislature, by the recommendation of an exemption from taxation, for a period of years, of all capital invested in certain branches of manufacture, has prominently brought to the notice of the State one means of securing this very desirable end, and we would, therefore, avail ourselves of this opportunity to cordially endorse such recommendation and to re-urge it upon the attention of all who are actively interested in the material progress of the State.

THE PROMINENT COMMERCIAL WANTS

Of the State are: First, a more solid and unfailing basis for its currency; secondly, the practical abolishment of the credit system, now so ruinous to both merchant and consumer; thirdly, more adequate means for transportation of the products of the State to the great markets of the country;

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fourthly, a uniform course of legislation calculated to secure and firmly establish the confidence of the commercial world in the integrity and honor of our people.

INDUSTRIAL EDUCATION.

This want is primary and universal. It is referred to last, therefore, only because it sustains a remedial relation to the above and to all other material wants of the State. If in a general and comprehensive sense, knowledge is power, by how much more must it be true of that special knowledge which directly acquaints the man of industry with the principles involved in his pursuit and also with the actual results of the most skillful practice of those best informed. The recent rapid development of the sciences and their constantly increasing applications to the practical affairs of life have rendered their study, not only in the college and high school, but also in the common district school and by the laboring man at his fire-side, a practical necessity. It is hoped that at no distant day this State will be provided with at least one thorough scientific and practical school, which may serve as a fountain-head for the better information of all the teachers of our schools and all the working classes of the people, in relation to the every-day duties of life. Until then everything should be done that can be, through the medium of plain, simple and elementary books in the schools, and of a large proportion of popular scientific works in all our public and private libraries, as well as by means of popular lectures and the organization of clubs or associations in every section and neighborhood of the State.

When all these things shall have been accomplished, the faults and defects of our industry will be less palpable and serious than now, and Wisconsin will early take her legitimate industrial rank among the foremost of the American States.

J. W. HOYT, *Secretary.*

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EXECUTIVE MEETINGS.

STATE AGRICULTURAL SOCIETY,

Madison, February 7, 1861.

Pursuant to notice, and in accordance with the By-Laws of the Society, the usual February meeting of the Executive Committee was convened on Tuesday, the 7th of February, at 10 A. M.

The following members were present: B. R. Hinkley, David Williams, David Atwood, E. W. Edgerton, O. T. Maxson, H. M. Billings, J. F. Willard, I. A. Lapham, J. I. Case, and J. W. Hoyt.

B. R. Hinkley, President, in the chair; J. W. Hoyt, Secretary.

The minutes of last meeting were read and adopted.

Reports of Committees called for.

The Committee appointed at last meeting to examine into the records and accounts of the Society, had misapprehended the intent of their appointment, and were not prepared to report.

Moved by D. Williams, that a committee of three be appointed by the chair to examine into the accounts of the Treasurer, and report as early as possible during the present session of the Executive Committee. The motion was adopted, and Messrs. E. W. Edgerton, O. T. Maxson and J. I. Case were appointed said committee.

Committee then adjourned until 2 P. M.

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Two o'clock, P. M.

Committee met pursuant to adjournment. Present same members as before.

Mr. Hoyt, on behalf of committee appointed to draft a new set of By-Laws, presented a full report, which, with some few amendments, was adopted, as follows:

SECTION I.—Of the Officers.

The Officers of the Society shall, *ex-officio*, fill the corresponding offices in the Executive Committee.

SECTION II.—Of the Duties of the Officers.

The duties of the President, in addition to those defined by the Constitution and the By-Laws regulating the duties of the Permanent Committees, shall be as follows, to wit:

1. To inspect the Fair Grounds, after they shall have been prepared for the Annual Exhibition by the Special Committee of Arrangements appointed for that purpose, and suggest such modifications or further preparations as he may deem necessary.

2. To formally open the Annual Fair of the Society, at such time as the Executive Committee may prescribe, with an appropriate address.

3. As the executive head of the Society, to have a general supervision and control of the entire Exhibition, subject only to the authority of the Executive Committee.

The duties of the Secretary, more specifically defined than in the Constitution, shall be as follows:

1. To make a faithful record of each meeting of the Executive Committee, and keep such record in a condition for the convenient reference of any member thereof, at any time; also, to make a record of every order drawn on the Treasurer, and delivered to parties in whose favor they were so drawn—separately entering and numbering the orders drawn to pay premiums, and those to pay general expenses, and so defining them—and of all moneys due the Society; in all cases holding the parties so indebted responsible therefor until they shall have presented to him a certificate from the Treasurer, showing that the same has been paid.

2. To open and carry on such correspondence as may be advantageous to the Society or to the common cause of agricultural improvement, not only with individual agriculturists and eminent practical and scientific men of other industrial pursuits, but also with other societies or associations whose objects are kindred to ours, whether in this country or foreign lands, and to preserve a journal of such correspondence in the archives of the Society.

3. To collect and arrange for convenient examination, standard agricul-

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tural works and periodical publications, together with such models, machines and implements as may be donated to, or otherwise acquired by the Society.

4. To investigate, as far as practicable, the nature of fertilizers, indigenous and cultivated plants, insects injurious to vegetation, &c., and to collect and preserve such specimens thereof as will illustrate the natural history and agricultural resources, condition, and progress of the State.

5. To institute, and collect reports therefrom, needed experiments relative to the preparation of the various soils of the State for economical culture; the cultivation of different grains, fruits, and garden vegetables; the breeding and raising of stock, &c., &c.

6. To visit, by the advice of the Executive Committee, or as his own judgment may direct, the various portions of the State, and to give lectures on the science and practice of agriculture, wherever and whenever they may be deemed most necessary or desirable.

7. To co-operate with the Superintendent of Public Instruction and the Agent of the Normal School Board for the introduction and use, in the schools of Wisconsin, of standard works on agriculture and the other industrial arts and sciences, and for the general promotion of the cause of industrial education.

8. To attend as many as possible of the industrial exhibitions of this country, particularly the County Fairs of Wisconsin; to co-operate with the President and Special Committee of Arrangements for the judicious preparation and management of our State Exhibitions; and to have the sole supervision and control of the Office of Entry thereat.

9. To carefully prepare and superintend the publication of the Annual Report of the Society to the Governor of the State; embodying therein the proceedings of the State Agricultural Society, an abstract of the reports of the incorporated County Agricultural Societies of the State, and such reports, essays and addresses, or other matter of information as may be calculated to enhance the value of said Report.

Finally, it shall be his duty, not only by the means above named, but also through such other instrumentalities as he may devise, and the Committee approve, to devote himself faithfully and unreservedly to the promotion of the industrial interests of the State.

It shall be the duty of the Treasurer—

1. To receive primarily and exclusively all moneys due the Society, from whatever source.

2. To keep a full and faithful record of all receipts of moneys coming into his hands, and of the source whence derived, in a book specially furnished by and belonging to the Society, and to have the same open, at all reasonable times, to the inspection of any person or persons authorized by the Executive Committee to make such examination.

3. To keep, likewise, an exact record of every order by him paid; and such record must be verified by the proper vouchers, showing that the sums therein named have been by him so paid.

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SECTION III.—Of the Meetings.

The Executive Committee shall meet annually, on the day preceding the day on which the Annual Meeting of the Society is held, on the first Tuesday of February, and again on the first day of the Annual Fair.

They shall also meet at the call of the Secretary—the President and a Vice President of the Society concurring—and may adjourn to any stated time.

SECTION IV.—Of a Quorum.

At any meeting of the Executive Committee, four members thereof shall constitute a quorum for the transaction of business.

SECTION V.—Of Permanent Committees.

There shall be two permanent committees of the Executive Committee; which shall be respectively styled the *Standing Committee*, and the *Finance Committee*.

The *Standing Committee* shall consist of the President, the Secretary, and the Treasurer, who shall have power, in the recess of the Executive Committee, to draw orders on the Treasurer for all necessary current incidental expenses. But the Executive Committee shall have authority, and are hereby required to revise the proceedings or transactions of said Standing Committee, and endorse or disapprove of the same.

The *Finance Committee*, shall consist of the President and Treasurer, and it shall be their duty to suggest means for increasing the revenues of the Society.

They shall also have authority to invest any portion of the funds of the Society, that may from time to time be set apart by the Executive Committee for investment, disposing of such funds upon such terms and conditions as may be prescribed by the Executive Committee.

Each of the above named sub-committees shall be responsible for the faithful discharge of their duties to the Executive Committee, to whom an appeal may at any time be taken from their acts or decisions.

The auditing, adjusting, allowing or rejecting of all bills, claims, or demands, of whatsoever nature, against the Society, and the issuing of orders upon the Treasurer for the payment of the same—except for the current incidental expenses of the Society, by this section already provided for—shall devolve upon the Executive Committee. And it shall be the duty of said Committee to annually examine the books, papers, and vouchers of the Treasurer and Secretary, and compare the same, and adjust the accounts between those officers and the Society, and to report thereon at the Annual Meeting in in December.

SECTION VI.—Of the Order of Business.

The following order of business shall be observed at all the meetings of the Executive Committee:

1. Reading the minutes of the preceding meeting.

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2. Reading the minutes and reports of the Standing Committee.
3. Reading the minutes and reports of the Finance Committee.
4. Report of Auditing Committee.
5. Reports from Special Committees.
6. Communications from the Secretary.
7. Communications from Members of the Committee.
8. Unfinished business.
9. Miscellaneous business.

This order of business may be suspended, however, at any time, by a vote of a majority of the members present.

SECTION VII.—Of the Fiscal Year.

The fiscal year of the Society shall commence on the first Wednesday of December, in each year, and all annual reports of the year previous shall be made up to that time.

SECTION VIII.—Of the Expiration of Terms of Office.

The terms of office of all officers of the Society shall expire on the 31st day of December, in each year.

SECTION IX.—Of Amendments.

These By-Laws may be amended at any regular meeting of the Executive Committee, by a vote of eight of the members thereof.

On motion, the Secretary was instructed to have the Fair Tents insured.

Mr. Edgerton offered the following resolution:

Resolved, That the tents belonging to the Society shall not be leased or loaned to, or in any manner used by other parties than the State Agricultural Society: *Provided, however*, That the Rock County Agricultural Society shall have the use of the said tents for the holding of their Annual Fair the present year. But the said Society shall so use said tents as not, in any manner, to interfere with their use at the Fair of the State Agricultural Society.

Which was adopted.

The Committee appointed to examine the accounts of the Treasurer, made the following report:

To the Executive Committee of the State Agricultural Society:

Your committee, to whom was referred the accounts and vouchers of the late Treasurer, would report, that they find the same correct, and that the balance in the hands of the

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Treasurer at the close of the last fiscal year, is found to have been eight hundred and seventy-nine dollars and eighty-one cents, which has been duly charged to him on the Cash Book of the Society, under date of 21st December, 1859.

E. W. EDGERTON, *Ch'n.*

Executive Committee then adjourned to 8 o'clock of succeeding day.

Wednesday, February 8, 8 *A. M.*

The Committee met pursuant to adjournment. Present, B. R. Hinkley, President; J. V. Robbins, J. I. Case and Bertine Pinckney, Vice-Presidents; J. W. Hoyt, Secretary; David Atwood, Treasurer; H. M. Billings, Benj. Ferguson, David Williams, I. A. Lapham and C. H. Williams; E. W. Edgerton and J. F. Willard, members *ex-officio.*

President Hinkley in the chair.

On motion, the communications from the Secretary, which were next in "order of business," were postponed for the present, in order to take up the Premium List for the next Fair, while the Board was full.

Premium List was then taken up.

At this stage of the proceedings Dr. E. B. Wolcott was introduced to the Executive Committee, and, on motion, was permitted to make a written offer (with verbal explanations,) of grounds to him belonging, and located near Milwaukee, and of certain sums of money, for the use and accommodation of the next State Agricultural Exhibition.

Which, after sundry enquiries on the part of the members of the Committee, was laid on the table for subsequent consideration.

The appointment of officers for the Fair being next in order, Mr. Hoyt moved that there be a *General Superintendent* appointed, with power to appoint the entire body of police, and any extraordinary assistants that may be necessary; and that he be allowed a clerk of his own appointment, and be required to keep a record of the names and posts of all persons under

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his supervision or control during the continuance of the Fair, together with the length of time employed, and the price agreed upon with each.

The motion prevailed, and J. V. Robbins, after an informal ballot, was unanimously elected to fill the office thus created.

The Committee then proceeded to an election of Superintendents of the several departments, with the following result:

SUPERINTENDENTS OF DEPARTMENTS,

STATE FAIR OF 1860.

Cattle Department,..... .....Benj. Ferguson.
Horse " .....Bertine Pinckney.
Sheep " .....C. F. Hammond, Jr.
Swine and Poultry, ...Whelden Hughes.
Agricultural Hall,.....O. T. Maxson.
Manufacturers' Hall,.....Daniel Daggett.
Operative Machinery,.....D. J. Powers.
Farm Implements,.....T. C. Dousman.
Plowing Match,.....Wm. F. Porter.
Fruit and Floral Hall, ...Mr. & Mrs. A. G. Hanford.
Hall of Fine Arts,.....Mr. & Mrs. I. A. Lapham.
Gates, ...David Williams.
Ticket Accountant,.....H. K. Edgerton.

It was *Resolved*, That the Superintendents of the several departments have the power, subject to the approval of the General Superintendent, to appoint all assistants necessary to the efficiency of their respective departments.

Wednesday, 2 *P. M.*

Present, same members as in the morning. B. R. Hinkley, President, in the chair.

On motion of J. F. Willard, it was *Resolved*, That the next Annual Fair of the State Agricultural Society be held on the 24th to the 30th, inclusive, of September, 1860.

The order of Exhibition was next taken up, and after some discussion, the Daily Programme of the Fair of 1859 was adopted, with the following amendments:

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The Fair shall be formally opened with an address by the President, at 10 A. M. of Wednesday.

Committees of Judges must complete their awards and make their returns to the Society as early as 12 M. of Thursday.

Trials of Speed shall commence at 1 o'clock P. M., Friday.

The Ladies' Equestrian Display, after considerable discussion, was voted a part of the exercises of the occasion, as heretofore; and J. F. Willard was appointed Superintendent of the same.

Voted, that the payment of one dollar to the Treasurer of the Society, shall entitle the person so paying it, to Annual Membership, and to six admission tickets, if an exhibitor, and to four tickets if simply a member; and that six tickets be issued to no one after the office of entry shall have been closed.

After several other less important changes in the Rules and Regulations of the Society for the holding of its Annual Fair, the Committee adjourned until 8 o'clock Thursday morning.

Thursday, February 9, 8 *A. M.*

Committee met pursuant to adjournment. Present, same members as before, except J. I. Case. President Hinkley in the chair.

Voted to receive any communications that the Secretary may have to make.

The Secretary addressed the Committee on the subject of the removal of the office of the Society; on the importance of publishing at once another volume of Transactions; on the propriety of memorializing the Legislature for the passage of laws for the protection of sheep, and the better collection of Agricultural statistics; on a proposed plan for securing valuable periodical exchanges, and for increasing the library of the Society; on the future policy of the Society touching the distribution of seeds, the making of scientific investigations, and securing the delivery of lectures on Agriculture throughout the State; and on certain modifications in the Premium List of the Society. He also read extracts from a large number of

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communications in answer to a circular letter, issued by him on the 18th of January, soliciting suggestions in regard to the policy, general and special, of the Society.

After which the subject of the location of the Fair was resumed.

Voted that Dr. Wolcott's proposition for the location of the Fairs of the Society, for the period of ten years, be next taken up.

After some little discussion, in which nearly all the members present participated, Mr. Willard offered the following resolution:

Resolved, That the Fair of the Wisconsin State Agricultural Seciety be located at Madison for the years 1860 and 1861; *Provided*, That the citizens of said place shall guarantee, on or before the 15th day of April next, the sum of two thousand dollars, to be paid into the treasury of the Society on or before the first day of September next, for the purpose of fitting up the Fair Grounds for the Exhibition of 1860, and the further sum of one thousand five hundred dollars to be paid into the said treasury on or before the first day of September, 1861; and that the President, Secretary, Treasurer, J. V. Robbins and C. H. Williams, be and are hereby constituted a committee to decide whether the said conditions have been complied with on the part of the citizens of Madison; in which event, it shall also be their duty to attend to the proper fitting up of the Grounds for the Exhibition.

Mr. David Williams asked the withdrawal of the resolution, in order that he might move an informal ballot on the number of years each member would prefer the Fairs of the Society to be held in one place. The resolution was withdrawn accordingly, and the informal ballot was taken with the following result:

6 ballots for 2 years, 6 for 5 years, and 1 for 1 year. A formal ballot was taken and resulted as follows: 7 ballots for 2 years, 4 for 5 years, and 1 for 1 year.

Mr. Willard's resolution was then taken up.

Mr. David Williams moved to amend by adding the following

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to the conditions to be fulfilled by the citizens of Madison, in order to the location of the fair at that place, to wit: *Provided*, Also, that the citizens of Madison shall furnish suitable grounds for the said Fair, free of charge to the Society. Which was adopted.

Mr. Edgerton moved to amend by substituting Milwaukee for Madison, wherever the latter occurs in the resolution, and three thousand dollars instead of two thousand dollars, and two thousand dollars instead of fifteen hundred dollars, wherever the said sums of two thousand and fifteen hundred dollars occur in the resolution—which was lost.

Mr. C. H. Williams then offered the following as a substitute for the entire resolution under discussion:

Resolved, That the Society advertise for proposals from all parts of the State for the location of the State Fair, for the years 1860 and 1861, and that the Fair be located at that point which shall guarantee to the Society the largest sum of money for such location. Lost.

The question then recurring on the original motion of Mr. Willard, for the adoption of his resolution as amended, the same was carried by the following vote: Messrs. Willard, Maxson, Atwood, Pinckney, Robbins, Billings and David Williams voted in the affirmative; and Messrs. Hinkley, Lapham, Ferguson, C. H. Williams, Edgerton and Hoyt in the negative.

On motion, it was, *Resolved*, That Complimentary Tickets be prepared and signed by the President and Secretary, and presented to the Presidents and Secretaries of the various State Agricultural Societies of the Union and of County Societies in this State, and to Editors, Clergymen and the principal rail road officers of the State, and that a record be kept of all tickets so presented, and to whom distributed.

It was also voted that the Complimentary Tickets be issued to individuals singly, and that the President and Secretary have discretionary power in the matter of distribution; *Provided*, That nothing be done by them which shall conflict with the specific resolution already adopted.

Resolved, That the Treasurer of the Society be required to

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give $15,000 bonds for the security of the funds that are now or may hereafter come into his possession.

Resolved, That the Secretary be required to give bonds for the faithful discharge of his duties to the amount of $3,000.

On motion, it was *Resolved*, That the committee already provided for by the adoption of Mr. Willard's resolution in regard to the location of the Fair, be and they are hereby authorized and required, in case of failure on the part of Madison to fulfill the conditions required by the Society, to locate the Fair at any other point, as their judgment may direct.

The Committee then adjourned until 2 o'clock P. M.

Thursday, 2 *o'clock P. M.*

The Committee met pursuant to adjournment.

President Hinkley in the chair.

On motion, the completion of the Rules and Regulations, the preparation of a List of Premiums, and the selection of Committees of Judges for the Fair, became the order for the afternoon; and at 6½ o'clock, on motion, the Committee adjourned till 8 o'clock A. M., Friday 10th.

Friday Morning, *Feb.* 10, 8 *A. M.*

The Committee met pursuant to adjournment.

Present—same members as on the day previous. President Hinkley in the chair.

The Treasurer presented his bond as required by the resolution adopted on the afternoon of Thursday, the 9th, with the signatures of B. F. Hopkins, D. J. Powers, Simeon Mills and J. C. Hopkins, as surety, which, on motion of D. Williams, was accepted.

On motion of E. W. Edgerton, it was *Resolved*, That a committee of three be appointed by the chair to examine the Order Book of the Society, to ascertain the number of orders drawn on the Treasurer, which have remained uncalled for until a period of six months has elapsed, and to report the num-

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ber of orders so drawn, the amount and to whom issued. The chair appointed Messrs. Edgerton, Lapham, and Pinckney, said committee.

The further consideration of the Premium List was then resumed, and continued until 12½ P. M., when the preparation thereof having been completed, on motion, the Committee adjourned until 2 P. M.

Friday Afternoon, 2 P. M.

Committee met pursuant to adjournment. Present, Messrs. Hinkley, Ferguson, Pinckney, Edgerton, Atwood, Billings, Robbins, Lapham and Hoyt. President in the chair.

Mr. Hoyt again urged the propriety and importance of appropriating $500,00 of the annual appropriation of $3,000 to the making of either a botanical or entomological survey of the State, and of continuing the same until such survey shall have been thoroughly completed; and in conclusion, offered a resolution to that effect, which, after some discussion, in which Messrs. Lapham, Billings, D. Williams, Edgerton and Hinkley took part, was lost.

Mr. Hoyt also revived the question of publishing at the earliest possible day, the Fifth vol. of Transactions—whereupon Mr. Lapham offered the following resolution:

Resolved, That the President and Secretary be authorized to procure the publication of three thousand copies of Transactions of the State Agricultural Society for the years 1858 and '59, with such engravings and other illustrations as may be necessary; *Provided*, That their publication cannot be otherwise secured, and that the cost of publication shall not exceed the sum of about two thousand dollars. After considerable discussion the resolution was adopted.

Mr. Hoyt offered the following:

Resolved, That the sum of one hundred dollars be and the same is hereby appropriated to the purchase of needed standard authorities for the Library of the Society. Which was unanimously adopted.

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On motion, it was *Resolved*, That the Secretary prepare a memorial to the Legislature of the State, praying for the passage of the bill for the protection of sheep, introduced by the Hon. Wm. R. Taylor, and now pending in the Senate; and that he be required to append the names of all the members of the Board here present, and see that the same is properly and promptly presented to the Legislature.

The committee on the examination of old orders, &c., through their chairman, submitted the following report: Your committee appointed to examine the old Order Books and ascertain the number, date and amount of orders drawn and not called for, have performed their duty, and hereby report that the amount of such orders is $191,50, as appears by the following list:

[The details of the report not being considered important, their publication is omitted.]

The committee recommend that the orders herewith presented be cancelled in the presence of the Executive Committee.

Respectfully submitted,

E. W. EDGERTON,
I. A. LAPHAM, } *Committee.*
B. PINCKNEY,

On motion of David Williams, the report of the Committee was accepted and adopted; and the orders enumerated therein, pursuant to the recommendation of said Committee, were cancelled and ordered to be placed upon file with other cancelled orders.

On motion of H. M. Billings, it was *Resolved*, That D. Williams is hereby appointed a Committee to enquire into the claims of Henry Hunt, of Delavan, to the Manny's Reaper offered in 1859 for the best field of wheat, and that he be required to report as early as possible.

There being no further business before the Executive Committee, on motion, the accounts of the several members for necessary expenses incurred in attending this meeting were audited and paid.

The Committee then adjourned *sine die*.

J. W. HOYT, *Secretary*.

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MEETINGS

OF THE

COMMITTEE OF PREPARATION FOR FAIR.

STATE AGRICULTURAL ROOMS,

Madison, April 16th, 1860.

Pursuant to a resolution of the Executive Committee, passed February 9, 1860, the sub-committee appointed to locate the State Fair for the years 1860 and '61, met in the State Agricultural Rooms, on Monday, April 16, at 7 o'clock, P. M. Present, Messrs. Hinkley, Robbins, C. H. Williams, Atwood and Hoyt. President Hinkley in the chair.

On behalf of the citizens of Madison, D. Atwood presented a bond, signed by responsible persons, guaranteeing, as a condition requisite to the location of the State Fair at Madison, for the years 1860 and 1861, the payment into the Treasury of the Society, the sum of two thousand dollars, on or before the 1st day of September, 1860, and the further sum of fifteen hundred on or before the 1st day of September 1861.

On motion, the said guaranty was accepted, and the Fair was declared to be located at Madison, for the period above mentioned.

The Secretary laid before the committee sundry papers, pertaining to the "Manny Reaper Prize," and moved that the matter be considered and disposed of without further delay.—The motion was adopted, and after a careful examination into

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the claims of Jas. Carr and Henry Hunt respectively, on motion of Mr. Williams, it was unanimously *Resolved*, That Mr. Henry Hunt, of Delavan, having failed to comply with the "Rules and Regulations" of the society, is not properly entitled to be considered a competitor for the prize.

On motion, it was then further *Resolved*, that the "Manny Reaper," offered through the Wisconsin State Agricultural Society by Messrs. Manny, Blinn & Co., of Rockford, Illinois, for the best crop of Spring Wheat, not less than 20 acres, should be, and the same is hereby awarded to James P. Carr, of Medina, Dane County.

The Committee then adjourned to meet at 8 o'clock the following morning, and proceed to inspection of grounds.

April 17*th*, 1860, 8 *A. M.*

Committee met pursuant to adjournment. B. R. Hinkley, President, in the chair. After a brief informal discussion of the necessary preparations for the Fair of 1860, the Committee visited the grounds known as the "Bruen Estate," the same being identical with those occupied by the society in 1858; and also the grounds known as the "Highland Grove." After the inspection, sundry propositions were made to the Committee, by parties interested in the several localities, and the Committee therefore resolved to postpone their decision for one week — the Secretary being instructed to inquire into the nature of the lease that could be secured in the two cases respectively.

April 25*th*, 10 *A. M.*

Pursuant to arrangement, Messrs. Robbins, Atwood and Hoyt, members of the Committee of Preparation for the Tenth Annual Exhibition, held a meeting at the Agricultural Rooms, with a view to make a final decision of the question of location of Grounds. The Secretary read letters from the President, in

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relation thereto, and it was thereupon unanimously *Resolved*, That the Tenth and Eleventh Annual Exhibitions of the Wisconsin State Agricultural Society be held on the land occupied in 1858 for a similar purpose, and that the Secretary be instructed to secure the immediate execution of a lease of the same for a term of two years.

STATE AGRICULTURAL ROOMS,

June 8, 1860, 8 *P. M.*

Pursuant to an authorized call by the Secretary, the Committee of Preparation for the State Fair met in the Rooms of the Society, to determine the number, location, character of the buildings, enclosures, etc., necessary to the Tenth and Eleventh Exhibitions, and to provide for the letting of contracts for the construction of the same. President in the chair. Secretary reported a lease of the "Bruen Estate," comprising an area of 53 $\frac{50}{100}$ acres; also a verbal lease to as much as the Society might wish to enclose, of the land adjoining the said "Bruen Estate" on the north-west. On motion, it was *Resolved*, That the grounds occupied by the Society in 1858, be enlarged by the enclosure of a strip on all sides so as to comprise in all some 40 acres, more or less.

Resolved, That the Society purchase the necessary lumber, and that the President and Secretary be requested to canvass the markets of the State, and make the most advantageous contract for a maximum of 200,000 feet of good common pine lumber, and the requisite number of cedar posts.

Committee adjourned to meet on Fair Grounds at 9 o'clock of the following morning, for the location of buildings &c.

June 9th, 9 *A. M.*

Committee met pursuant to adjournment, and after a careful survey of the grounds, determined upon the location of the buildings, gates, &c., and then adjourned to the Rooms of the Society.

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On motion, it was *Resolved*, That there should be erected a "Hall of Fine Arts," 50x100 feet; a Ladies Hall, 20x36 feet; an Executive Office, 20x40 feet, with partitions for a Superintendent's Office, and an Editorial Hall; an Operative Machinery Hall, 50x100 feet; 2,000 running feet of stalls for cattle and horses; 600 running feet of pens for swine and sheep; and 50 running feet of coops for fowls; a Judge's stand within the trotting course, together with such other structures as may be necessary to the convenience and comfort of the public.

It was likewise *Resolved*, That the enclosure be eight feet high, and constructed of good cedar posts and upright boards.

On motion, the Secretary was instructed to advertise for bids, and to let the contract for mechanical work to the lowest responsible bidder.

The following preamble and resolutions were offered by the Secretary, and unanimously adopted:

Whereas, That contagious and most destructive disease known as "pleuro-pneumonia," is now making fearful ravages among the cattle of New England; *and*,

Whereas, There is great danger, unless every precaution shall be used to prevent its spread, that it may extend from State to State, until the whole country shall have been made to suffer its devastations, therefore,

Resolved, That it becomes the imperative duty of every State not yet invaded by said disease, and of all agricultural organizations therein, to discourage, and, by all lawful means, strive to prevent the importation of every description of neat-cattle, until satisfactory evidence shall have been furnished that it has been entirely extirpated from the country.

Resolved, That, in pursuance of this conviction, we feel called upon, as the authorized representatives of the Wisconsin State Agricultural Society, to carefully exclude cattle, brought from without the limits of this State, from competition at the annual fair to be held in Madison in September next, or from admission to the grounds to be occupied for the purpose of the exhibition.

Resolved, That we do hereby urge upon all farmers and dealers in cattle in Wisconsin, the policy of non-importation, not only as the wisest measure of self-protection, but also as a patriotic duty to the welfare of the State.

Resolved, further, That we respectfully and earnestly recommend to all the Boards of Agriculture, and Agricultural Societies of other States, a similar policy of non-importation.

Committee then adjourned *sine die*.

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STATE AGRICULTURAL ROOMS,

Madison, July 16, 1860, 7½ *P. M.*

A majority of the Committee of Preparation having occasion to be at Madison on duty as members of the Committee of Judges on Farms, a meeting was held on this, Monday, evening, July 16th.

The President reported on the prices of lumber, and was instructed to buy at Milwaukee.

The Secretary opened the bids (8 in number) for the job of fitting up the Fair Grounds, and after due comparisons, the contract was unanimously awarded to Wyman, Ufford & Wescott, of Madison, who legally and in a satisfactory manner, bound themselves in an agreement to perform all the mechanical work according to specifications furnished by the Committee, for the sum of $800,00, and to complete the same on or before the 10th day of September.

A proposition was received from Norman Wiard, Esq., of Prairie du Chien, to exhibit his Ice-boat at the Fair, for the sum of $1,000, to be paid by the Society at the close of the Fair. The Committee rejected his proposal, but instructed the Secretary to offer Mr. Wiard a suitable private enclosure 40x 80 feet, with shed roof, for the exhibition of his boat, and the privilege of charging a moderate fee for admission.

Adjourned *sine die.*

The Executive Committee met at the Agricultural Rooms in the evening of each day during the week of the Fair; but as their action was almost exclusively upon matters of temporary interest connected with the conduct of the Fair, it is not deemed important to publish these proceedings.

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STATE FAIR OF 1860.

The Tenth Annual Exhibition of the Society was held at Madison during the last week of September.

The Grounds, which for convenience to railroad and city, for the beauty and magnificence of their surroundings—commanding, as they do, a charming view of lakes, city and country—for the admirable form of their undulating surface, and for their perfect adaptation to the purposes of such an Exhibition, are unsurpassed, if not unequaled, by any in this country, were handsomely fitted up and in every respect well calculated to produce a most pleasant general effect.

The enclosure was extended beyond the lines occupied in 1858, and by thus including twelve or thirteen more acres—most of it covered with beautiful young oaks—very materially improved the appearance and convenience of the Grounds; while the erection of neat cottage offices, more commodious, substantial and imposing exhibition halls, the better grading of the trotting course and the lengthening of its curves, the better provision in the way of stalls, pens, &c., for the use of the stock, and the retiring into the back ground all refreshment stands, contributed yet further to make this, what it is almost universally thought to have been, the finest Exhibition hitherto held in this State.

The weather was faultless, the entries large in number and of superior quality, and the attendance, especially on Thursday and Friday, entirely unparalleled in the history of the Society's Fairs.

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In the department of Operative Machinery—owing chiefly to the failure on the part of the Superintendent to provide the means for satisfactory trials—the exhibition was quite inferior to what it should have been. But in the other departments it was excellent—in some, indeed, magnificent.

Horses, especially in the Thorough-bred and Roadster classes, were of superior quality; Cattle in large numbers and of the best breeds; Sheeep, Swine and Poultry, fair in number and character. Of domestic animals, generally, the whole number of entries was 580—larger by sixty than at any previous fair.

The department of Agricultural and Dairy Products was filled to overflowing with the finest products that we remember ever to have had the pleasure of seeing on a similar occasion. The show of grains of various kinds was especially worthy of commendation. Whole number of entries in this Hall, 568—108 larger than ever before.

The exhibition of Fruits was also very fine—finer indeed than at either the United States, Ohio, Michigan or Illinois Fair of the same season; which is certainly gratifying to our State pride and highly creditable to the enterprise of the fruit-growers of Wisconsin who have struggled so manfully for years against serious climatic difficulties and all sorts of false prophecies.

We cannot forbear in this connection to quote a few lines from the correspondence of Dr. Kennicott, of Illinois, published in the *Prairie Farmer*. Formerly Secretary of the Illinois State Agricultural Society and the leading horticulturist in the West, his words of complimentary reference are worthy of record for the encouragement of the farmers and fruit-growers of our State. They are as follows:

"But, all praise to the genuine hard diggers—the real farmers of the Badger State—the Hall of Farm and Dairy Products was the crowning glory of the State Fair! A grand show—an immense show—a show worth going an hundred miles, and more, to see, in that one hall, alone. Here, Counties as well as individuals competed; and Pierce County—away up north, on the Upper Mississppi—showed enough, of itself, to eclipse more than one great State exhibition. Oh! such measures of wheat, oats, rye, barley, buckwheat, peas and beans—and such "traces" of yellow corn, I never saw before. And

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the whole line of vegetables was equally astonishing. Potatoes, large and fair, of a dozen sorts—and in piles—carrots, turnips, beets, salsify, the cabbage family, egg plants and tomatoes, onions by the bushel, and squashes by the ton, were heaped up, upon and *under* a double circle of tables, in one of the largest tents of the Society—leaving but half of one outer table, for honey, in good display, butter in numerous packages, and cheese in bulk—a lot of the latter still on the wagon that brought it; and one of the cheeses—made by J. V. Robbins, near by, weighed *only* 1,620 lbs.! Glory enough—for one County—and creditable to others, and to the whole State, was this show of Wisconsin products.

Fruit was in great abundance—and of great variety. Apples leading—*grapes* coming next, in show—about 25 varities of them. Pears in respectable display—some plums—more, of home growth, than at our State Fair—and even fine, well-ripened peaches!—and, of course, specimens of that interesting native fruit, the cranberry, from cultivated vines, and well loaded vines they were. Upon the whole—and in grapes, particularly—the Badgers have beaten *us*, this time.

Among the new features of this Exhibition, the exhibition by Counties is especially deserving of notice. The prize to be awarded—a splendid Banner, worth one hundred dollars, offered by citizens of Madison—had the effect to stimulate many of the County Societies, to whom the banner was directly offered, to vigorous effort, and the result was a spirited competition, though confined at the last to but few of the numerous counties of the State. The presentation of the prize, a rich and beautiful work of art, skilfully executed by Messrs. Chambers & Dubois, of Chicago, was a pleasant occasion, and the remembrance of it will doubtless long be cherished by the Banner County.

The Prizes, consisting of a Silver Pitcher and Silver Goblet, awarded by the Committee on Farms, were also presented at the same time.

One other new feature is likewise worthy of mention in this connection. Reference is made to the series of valuable Scientific and Practical Lectures, delivered on three of the most important evenings of the week in the Capitol. The Society was fortunate in securing the services of Drs. Kennicott, Reid and Carr for these three several occasions. Their lectures were well attended, and gave great satisfaction to the large numbers who were present. Outlines of the first two have

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been kindly furnished by their respective authors, and will be found on subsequent pages of this volume.

The Annual Address was delivered by His Excellency Governor Randall, to a vast concourse of interested people. It was a plain, pointed, characteristic address, and we very much regret that a copy has not been furnished for publication,

As usual, much inconvenience was experienced from the failure of many of the originally appointed Judges to be present, and perform their duties on the various committees—a failure all the more to be regretted, because a large majority, in response to a circular letter from the Secretary, had accepted their appointments previous to the publication of their names in the List of Premiums, &c., of the Society.

The Executive Committee can see no way in which this annually recurring source of embarrassment and error can be overcome in the future; but nothing is clearer than that the success and usefulness of the Exhibitions must be seriously impaired by the hurried making up of committees by the impressment of persons, who, however well qualified naturally and by general information, have not had time to fit themselves for the important special duties assigned them.

It is the opinion of the officers of the Society, however, that in their selection of Judges on this occasion, they were, in the main, very fortunate; and they cheerfully avail themselves of this opportunity to return to the several committees, their thanks for the faithful manner in which they seem to have performed their arduous duties. Had the chairmen of the committees more generally furnished full written reports on the subjects referred to them, the results of their labor of inspection would have been still more satisfactory to the Society, and profiting to the public.

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OPENING ADDRESS.

BY B. R. HINKLEY, PRESIDENT OF THE SOCIETY.

Gentlemen of the Wisconsin State Agricultural Society, and Fellow Citizens: We have met for the Tenth Annual Exhibition of the Industry of our young and prosperous State, under the most favorable auspices. Providence has smiled upon us as never upon any people before. Since our last great annual gathering, the seasons have been so propitious, that even the most difficult and fault-finding farmer has hardly found it necessary to suggest any improvement. The winter was dry and mild, enabling the husbandman to keep over his stock without either loss or great expense, and to perform with comfort those out-door labors so essential to a due preparation for the busy months of seed-time and cultivation. The season of growth was the most remarkable that we have ever known, producing an unexampled luxuriance of vegetation; and the months of the harvest have favored the economical gathering of a wealth of crops so great that the jealousy of other States will hardly allow them to credit its vastness.

Moreover, the stringency of the times, financially considered, is beginning to relax all over our country, and the elongated faces of the people are growing perceptibly shorter. Under such circumstances, it is eminently fit that this great Exhibition should partake of the nature of a jubilee. The place where we are met is one of the most attractive of all the beautiful landscapes that gem the incomparable West, and the energy and good taste of those who have had the immediate

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superintendence of its preparation, have covered it with improvements which adapt it to our convenient use, while they challenge the admiration of friends and beholders.

The Exhibition, too—the horses and cattle; the sheep and swine; the products of the field, garden and workshop; and the finer products of artistic genius in yonder Hall of Art—these are worthy of the year, the place, and the occasion.

Allow me then, Farmers and Artizans of every character and class, to congratulate you on the abundant success which has attended your efforts as producers, manufacturers, and exhibitors; and you, members of the Society; and you, my colleagues of the Executive Committee, on the prosperity which has this year attended the organization whose large and important interests have been intrusted to our guardianship.

It could not be expected that in ten years, during which time the Wisconsin State Agricultural Society has had a corporate existence, we should have attained to that degree of strength and world-wide reputation which mark similar institutions in New York and some other older states; but in view of our youth as a Society and as a State, I feel that I am warranted in claiming for both, a degree of development and of character highly creditable to our people and commonwealth. As a State, we have subdued the native wildness of the territory, and covered it with luxuriant crops; we have built hundreds of beautiful villages, and one noble commercial city; we havo made costly improvements on our great lakes and navigable streams; we have banded our domain with railroads, and threaded it with telegraphs; we have organized systems of education which are now offering the boon of intelligence to almost every community and neighborhood within our borders, and which even look to the highest culture of all; and we have increased our population from a few tens of thousands to almost a million of people!

As a Society, we have contributed largely to the aforesaid results, by fostering and dignifying the industrial arts, by stimulating individuals to increased efforts for excellence, by diversifying labor and by prompting communities to that or-

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ganized effort in the counties and towns, which are accomplishing much in hundreds of localities in Wisconsin for the advancement of the agricultural and mechanical pursuits.

These are the professed and real objects of this Society and it would not be difficult to show that its labors have not been in vain. But I am aware that, as yet, it has but fairly begun the fulfillment of its noble and beneficent mission. We, my immediate associates, and you, friends of agricultural improvement, are responsible for the progress of this work. And, as an equally appropriate occasion will hardly again offer itself to me for the utterance of some things which I feel it my duty to say, you will pardon the suggestion that such an institution as this can only be of the highest utility when under the control of men of large practical wisdom and of earnestness, and unselfishness of purpose—men who know what the interests of the State require, who have the sagacity to devise the best means for meeting those demands, and who are characterized by that devotion to the public good, which is the only security for a faithful discharge of official duty.

I make this remark, not with any intent to reflect upon either the deficiencies or positive errors of those who have hitherto or do now wear the badge of office in the Society, much less because I have any personal ends to secure, but rather with the view, first to impress the truth itself, and secondly that I may the more appropriately pay a just tribute to the worthy gentleman who during the past year has discharged the important and arduous duties of Secretary of the Society with so great ability, fidelity and success; and, also, to those other members of the Executive Committee who have had the preparation for this Exhibition and the general interests of the Society more immediately in charge.

A word now of the requisites to the further success of this exhibition.

It is not enough that the live stock, the grains and vegetables, the fruits and flowers, the machines and implements, and works of art are brought together here, and that multitudes of enterprising people will be here to examine them. In order to

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the best results, justice must be done to every interested party.

I will concede that absolute justice cannot be done in every case; still it is possible for those who are concerned in the public acts and decisions of the occasion, to approximate to that most desirable end.

The general good order must be determined in a large measure by the promptness and efficiency with which the Superintendents of the several departments execute the plans of the Executive Committee; and the personal satisfaction of exhibitors rests almost entirely in the hands of the Committees of Judges. In making selections of these officers, great care has been taken by the Society to secure the most competent men and women in the State. Most of those who were appointed have formally accepted the position assigned them, and pledged their best efforts to discharge the duties thus assumed, faithfully and impartially. Others have declined, or, having accepted, are prevented from attending the Fair. The places of these last will have to be filled here and now by the appointment of such competent persons as may kindly consent to serve.

In conclusion then, ladies and gentlemen of the Departments and of the Committees, let me urge you to command your best efforts and knowledge for the difficult and responsible duties before you. Remember, also, that the present value and future usefulness of these annual demonstrations rest upon the fidelity of your action. Be true to the great object of our organization, and there will be nothing wanting to make this Exhibition a triumphant success, complete in its immediate enjoyment, valuable in its practical results, and most happy in its remembrance.

I now proclaim this, the Tenth Annual Exhibition of the Wisconsin State Agricultural Society, open to the inspection of committees and people.

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CONDITIONS OF FRUIT GROWING.

Synopsis of a Lecture before the State Agricultural Society, during the Fair of 1860.

BY DR. JOHN A. KENNICOTT, OF ILLINOIS.

* * * * * * * * * *

CLIMATE.—Ours is that of the south-west in summer, and that of the north-western prairies in winter; and very unlike that of our Eastern states, from which we derived most of our first varities of fruit, and nearly all of our first plantings of fruit trees. It was not until half our orchards were badly winter-killed, that we learned the fact that *trees*, sufficiently hardy in latitude 42° *east* of the great lakes, were often tender *west* of them, on the same line; and we are every year learning that some sorts bearing well east, are barren west, and that *quality*, as well as quantity of fruit, is affected by climate on the same parallel of latitude.

Probably not more than one-fourth of the varieties of the apple, originally planted, have proved hardy, productive and good—though possessed of all these qualities east, and perhaps retaining one, or even two, of them here. And with pears, cherries, and in many cases *plums*, a much larger proportion has failed. I now propagate but about 30 sorts of the apple—6 or 8 of pears and plums—and *none* but Kentish and Morello cherries, for this region. Of grapes, and "small fruits" (that can be laid down and covered with earth in the winter), all sorts that *ripen* a good crop, may be planted. *It is not the extreme cold, but the sudden changes of temperature, and a blistering sun, that kills our trees;* and, unless protected, we must

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plant such varieties only, as have been proved hardy enough to withstand the climate.

SOIL.—Soil, too, and its condition in regard to water, is of much account in the selection of varieties suited to climate, and often settles the question alone. There is a difference of ten or fifteen degrees between the temperature of well-underdrained, and sodden soil; and, besides, "wet feet" is more damaging than hard frost. I have never seen an orchard, here, in good health and full bearing, where water could stand about the roots till carried off by evaporation. There is no use planting in such a soil without artificial drainage.

Nearly all our virgin soil is rich enough in organized matter to produce our hardy fruits; but much of it is deficient in mineral elements, and objectionable in *color* and mechanical texture; a black, spongy soil is the worst for fruit trees—and, other things being equal, a light-colored, stiff "clay," the best. An analysis of my black prairie soil gave less than 2½ per cent. of alumina—the base of clay. A good wheat soil contains 6 or 8 per cent.; and good wheat soils are usually good fruit soils. Where there is no more than two or three per cent. of alumina in the first furrow slice, there is often three times as much within reach of a trenching plow, and certainly within reach of a spade. But if you *trench* you must *underdrain*, or you will have more water than before about the roots of your trees. Where there are springs to be tapped, so as to keep the arch moist, *mole draining* will, doubtless, answer; and open draining, though wasteful, is better than none.

DEEP PLANTING.—It is a great fault. Avoid it. In well drained soil it does no good—in wet soil it is ruinous. Better plant on the crown of a back-furrow ridge, without "digging holes" at all, than sink the roots of trees more than four or five inches below the natural surface, in naturally wet and undrained soil; as the tree grows the roots will go down far enough.

PROTECTION.—This is a subject which is attracting much attention. Belts of forest trees, especially evergreens, hedges,

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high board fences, &c., are of great avail; and so are close planting and *low heads.* Other things being equal, I have lost nine trees with tall, naked trunks, for one with a head based on earth, so as to shut out the sun.

CULTIVATION.—Young trees require more cultivation than *corn*, and old ones little less. None but hoed crops should ever be taken from an orchard. Grass is bad, and small grains ruinous. When an orchard comes into bearing, the *fruit crop* is enough to take from it.

PRUNING.—Except for top-grafting large trees, or removing dead limbs, a *saw* should not come into an orchard; and your *knife* should be used sparingly. "Cut back," or "shorten in," long straggling branches, and the "whip-stock" tops of young trees, and remove a little of the superfluous spray from the middle of the heads of such old ones as are inclined to get unreasonably thick, and consequently, barren in the center. But don't remove strong, healthy limbs, unless they rub against each other, and cannot be *tied apart*, and preserved.—As often practiced, pruning is little better than barbarism. Mid-summer is the best time to prune young trees; but autumn, before cold weather — or spring, before the buds start, will do, and is all the better if you wish to increase the growth of wood.

MANURING.—Vegetable manures are usually injurious, when applied to young trees, by causing too rapid and spongy-wood growth; but it may be necessary in poor, thin soils, after the trees have been a few years in bearing. I would then use it as a top-dressing.

Leached ashes, bones, lime &c., are *needed* wherever the mineral matters they afford are either exhausted by crops, or naturally deficient.

Our summer substitute for fruit—the *Pie Plant*—will stand a heap of manure, and needs it; and that democratic berry, the Currant, seldom gets enough.

VARIETIES OF FRUIT.—I am sorry to say that we, of Northern Illinois and Wisconsin, cannot depend entirely upon the

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books, nor upon every nursery catalogue, if we can upon any, in selecting varieties. A few European varieties — especially Russian apples — are perfectly hardy here, and may do far north, while some from our Northern States are quite tender. It is best to know how a variety has succeeded near you before planting largely of it. Remember that every variety adapted to the climate may not be suited to your soil, and may prove *unproductive*, if ever so hardy; and some rather tender species may be worth the trouble of winter protection—like the peach, and especially raspberries and blackberries, and some of the more delicate strawberries, grapes, &c. Indeed, except the peach, all of them will "pay" for being laid down and lightly covered with dry earth, late in autumn.

[Subsequent to the delivery of the highly instructive lecture, of which the foregoing is a mere skeleton, Dr. Kennicott forwarded the following explanatory note in relation thereto.]

Since my public talk about fruit growing, during your State Fair, (of which the above is the substance) I have conversed with several Wisconsin Fruit Growers, who expressed fears that a wrong inference, in regard to *winter protection*, would be drawn from some of my hasty answers to questions put to me. *They* say—and I believe with truth—that, in sandy soil especially, winter protection to the *roots* of trees, *is* necessary. And, if so spread as to prevent giving a harbor to mice, I am inclined to recommend the use of coarse manure over the roots of bearing trees, in autumn; or, in default of that, hay, straw, cornstalks, or litter of any kind, to be removed or plowed under in the spring. It is, perhaps, the least objectionable sort of "mulching," and will prevent the too early freezing and too rapid thawing of the earth, beneath, and can do no harm whatever. Still, except in cases of small seedlings, recent "layers" of plants, quince stocks budded with the pear, beds of newly planted bulbs, strawberries, &c., &c., I have not found winter mulching a necessity at my place. J. A. K.

The Grove, Illinois.

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THE PRACTICAL DEVELOPMENT

OF

THE RESOURCES OF SCIENCE

In Relation to Agriculture and the Health and Habitations of the People.

Outline of a Lecture before the Wisconsin State Agricultural Society, delivered in the Assembly Hall, September 27th, 1860.

BY DR. D. B. REID, LATE OF THE UNIVERSITY OF EDINBURGH.

Dr. Reid commenced by stating that it was a source of much gratification to him, to have the honor of addressing the great meeting assembled in this Hall. Every building should be commenced with a sound and sure foundation. In the same manner, if we wish to reap the full fruits of Science, we must sow the seed in the spring of life. The application of science to agriculture, and to the health and habitations of the people, involved questions of great interest. In a single lecture he could only touch on the more prominent topics connected with these subjects. But the views he advocated had been continuously illustrated, at least during the last twenty years, and he was glad to perceive in one of the late reports on Agriculture issued at Washington, plans of a similar nature, in some respects, were brought forward with all the earnestness of sincere conviction.

He claimed the indulgence of the audience to an educational question, which, he trusted, in the course of time, would unite the whole population in daily increasing efforts for promoting the progress of Agriculture.

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The institution of State Fairs has done much for the improvement of Agriculture, rendering the results of individual efforts accessible to the whole community.

By the personal examination of specimens and inventions, and the opportunity of conversation with the producer and inventor, every man can obtain specific information, such as cannot, in general, be acquired with equal facility in any other way. Difficulties can be explained, doubts resolved, objections answered, fallacies pointed out and expenses calculated. Nor is it of small consequence that the collective opinion of a great gathering, and of a special council devoted to the consideration of such subjects, should lend its influence, experience and judgment on such occasions.

The friendly collision of congenial minds, the opportunities of social greetings and new friendships, patriotic feelings for improving the State of Wisconsin and cosmopolitan interest in the progress of Science throughout the globe, all add to the interest of the scene.

But no advantages connected with them are more important than those that flow from the opportunity they afford of considering such national improvements, as can be inaugurated and sustained only by the general voice of the country, and the aid of public institutions, founded for the promotion of Science and Education.

After those great truths, that relate to man as a moral, a religious and an accountable being, Agriculture has, with much justice, been regarded as the basis of civilization, commerce, art and science. Abundance of food being the first necessity of life, in proportion as it is produced with facility by a few, so is the time, labor and ingenuity of others liberated for arts and manufactures, and every thing that contributes to the comfort and prosperity of nations, and the refinement of High Art, Literature and Science.

From ancient times to the present day, men of the highest genius, the most refined taste, and the most cultivated philosophy, have ever appreciated Agriculture; and some, as Cicero, speak of it in terms of so much warmth and attachment, that they

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evince equally their sensibility to the great practical issues of life that are based upon it, and to the wonderful and mysterious powers that mark the progress of vegetation. But, however incomprehensible many of these may be, there is no art or science that can be more widely benefitted by a knowledge of the material world, or that more largely demands, when cultivated with the perfection required in modern days, all the aid and appliances which the present times can afford.

It is contended, accordingly, that whatever special assistance this Society may contemplate from a College of Agriculture, a Model or Special Experimental Farm, or equivalent departments connected with the University, nothing would tend more to increase the development of the resources of Science in relation to Agriculture, than throwing open the study of nature, to such an extent as may be desirable to the whole population through the elementary or common schools.

It is not considered that they should take up questions of difficulty and detail, that ought to be reserved solely for a special College, a University, or the Farm itself, but that the principle should be adopted and carried into execution, that all men are born with a power to understand the great and peculiar features of the material world, that have attracted so much attention in modern times, and that no department of industry would be more amply rewarded by such a course than Agriculture.

In advocating the necessity of such a measure, we do not mean to affirm that in a new country, where the richness of its soil is great, and new fields may be opened when the cream of each has been exhausted, there may not be many who will prefer to pass from field to field, and farm to farm, as they impoverish its first productiveness. But the great body of agriculturists do not mean to desert their homesteads. They desire to cultivate them with all the care and all the appliances that the progress of years developes from time to time. And thus, while the periodical reunion of friends and strangers engaged in a common cause, draws in illustrations of the useful and the beautiful from every variety of source, an earnest

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call for improvement is its leading and characteristic feature of the day.

At the same time, the State Agricultural Fair is still more comprehensive than its title indicates. It is, in reality, a reunion of Agriculture, Arts and Manufactures. So intimately are all the relations of the material wants of man blended with each other, that it is impossible to advance any department, without involving in the train of improvement numerous affiliated or dependent branches. It was said in reference to a transatlantic exhibition of art and science, that "social improvement, national industry, and national taste, are so "necessarily associated with each other, and these again with "the progress of good feeling and intellectual and religious "knowledge, that it would be difficult to trace in all their "relations and ramifications, the line of demarcation between "them." So, in the same manner, we have only to inspect the catalogue of articles at this Agricultural Fair, to convince us that the taste, the feelings, and the dispositions of the people, though directed specially to Agricultural pursuits, bound over all technical limitations, and delight in all illustrations of Art and Science, whether springing from the fruits of the earth, the developments of Chemistry and Mechanics, the productions of the animal or vegetable kingdom, or manifested in the music of the Calliope, the skillful and eccentric carving that denotes the genius of sculpture, and the valuable paintings that lead us to hope the artist will extend his pencil to the beauty of the scenery with which we are surrounded. It simplifies accordingly, in no small degree, the question of the general introduction of science into our common schools, to find how universally it is connected with the taste and associations of the people, wherever an opportunity is given for its development. But without wandering over a wide and extended series of illustrations, let us select two points more especially for examination on this occasion, viz. the relations of Chemistry and Physiology to the interests of the Agriculturist on his farm, and in his abode at home.

During the last century Chemistry has unfolded the precise

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composition of air and water, soils and minerals, vegetables and animal productions, and the changes that accompany life and death, nutrition and decay, to an extent that has thrown as much light on the progress of Agriculture, as it has shed on Arts and Manufactures.

We now know the true component parts of numerous vegetables, and if they are not to be found in the soil, in the atmosphere, or in the water, vain must every attempt be to stimulate their production, without adding at the same time the absent ingredients in a suitable form. We may suppose a field whose mineral constituents are such that the action of air and water, heat and cold, return annually as much of the elements to it as the crops may remove. But this is an exception to the rule. The tendency in all ordinary cases, is for the farmer to exhaust his soil, except where a river, like the Nile in its annual inundations, restores by mechanical deposition, and precipitation from solution, the required ingredients. Hence the analysis of plants and soils is the only true basis for Scientific Agriculture.

But while many admit the importance of these conclusions, they are disposed to assert that such knowledge is often too refined and too difficult of attainment to come within the reach of the farmer. The reply to this is evident. Professional men must be employed for the more complex and difficult cases, but many are the instances where even a very moderate amount of chemical knowledge has proved invaluable. Let me quote one or two instances that have come under my own observation.

A farmer in the vicinity of Edinburgh had long been puzzled by the very bad crops from a field to which he had paid the most scrupulous attention, according to the ordinary rules of farming. Chemical aid having been called in, it was ascertained that the field in question was subject to injury from the variable overflow of an acid chalybeate spring. By the addition of lime to the water, so as to neutralize the acid, further injury was prevented, and abundant crops obtained in future. [Here Dr. Reid illustrated, experimentally, the tests used on this occasion, and the facility with which they were applied.]

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It was certainly true, that cases did not always occur so simple in their nature, and so capable of a satisfactory solution. Nevertheless, it was a good example of one of a series of cases. For its complete and effectual management, the farmer required no more information than had been specified, and the difference to him in income amounted to about one thousand dollars annually.

Again, whatever may be the quality of beef or butter, or of any other provisions that are preserved with salt, nothing is more common than to find that they are often passed by in competition, if the quality of the salt shall not have been most carefully studied. With fish the same attention is necessary as with beef. Common salt is liable to various contaminations in different parts of the globe. The most frequent are sulphate of magnesia, muriate of magnesia, and carbonate of soda. The first gives a bitter taste to the meat cured with it; the second renders it acrid; the last gives it a peculiar alkaline taste. Many are the processes for purifying salt, and the tests by which the impurities are detected, are easily understood and applied. [The tests were then illustrated and explained.] The great object was always to secure pure salt, the taste of which might be described as sweet and saline, and totally free from the irritating and offensive qualities of the impurities mentioned.

Another instance was then cited, in which cheese of a very plain quality, and with little or no flavor, had been much improved by introducing into it a small portion of a cheese that sold at several times the price, a kind of fermentation ensuing subsequently accompanied by the development of a microscopic fungus that gradually extended through the whole mass, when kept for a few weeks in a damp cellar, or surrounded by a cloth moistened with water.

Dr. Reid then entered on a series of experiments illustrating generally the system of instruction he desired to introduce in the Common School, and the apparatus and materials he proposed to employ; he contended that until some such system was in general operation throughout the land, the population

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would not be able to keep pace with the wants and progress of the times, nor the pupils entering Universities to take the advanced position in science which previous progress in the elementary school would enable them to attain. A broad and comprehensive view of the wants of Agriculture, connects it with the Geology and the Meteorology of the country, as well as with its Botany and Zoology, and all the varied appliances that Chemistry, Natural Philosophy and other sciences can bring to bear on its progress. How great is the mystery that has been cleared away in reference to the real causes that regulate the rotation of crops, the changes in fields subjected to fallow, and the right application of manures! How much power has been gained by the discovery of the effects of phosphates, nitrates and sulphates, under different circumstances, and the action of ammonia, soda, potassa, lime, magnesia, alumina and silica! How many are the questions that occur to every farmer as to individual soils, and the extent to which they can be improved by manures and by labor sufficiently accessible at a moderate cost! Who can look at the agricultural publications in different states, and particularly the official documents emanating from the press at Washington, from this Association, and those in other States, the Farmers' Magazine conducted by your zealous and able Secretry, as well as other kindred publications, without being irresistably led to a deep conviction of the magnitude of the subject, and forced to the conclusion of the inadequacy of all means to do it justice that do not contemplate the early education of youth in select lessons in Science?

Who can calmly examine the decline of the wheat crop in the numerous American States, without putting the questions, "How far are such reductions to be attributed to an undue exhaustion of the soil, and how far is Wisconsin following in a similar track?" The summary annexed shows results that have been largely quoted, both in this country and Europe:

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TABLE showing the amount in bushels of the Whent Crop ia different States, in the years 1840 *and* 1850.

	1840.	1850.
Connecticut,	87,000	41,000
Massachusetts,	157,928	31,211
New Hampshire,	422,124	185,658
Maine,	848,166	269,259
Tennessee,	4,569,692	1,616,386
Kentucky,	4,808,162	2,142,822
Georgia,	1,801,830	1,088,584
Alabama,	838,052	294,044

If the introduction of the elements of Science in the Common School be important in relation to Agriculture, it is no less imperative in connection with the great cause of sanitary improvement. The health and strength of nations, as well as of individuals, and the duration of human life are intimately linked with the right interpretation of the laws of Nature. How many localities are there where half the people born are carried off by death under five years of age! How many are the death-bed scenes where a little knowledge of the pulse, of respiration, of the influence of a vertical or a horizontal position, of heat and cold, and of dry and moist air, would have averted a fatal termination! Is there a house that should not have its Florence Nightingale? Is there an individual who would not steer his way more carefully through the varied dangers of life, were he taught systematically in early youth some of its most important relations to the elements with which we are surrounded? The true aspect of this question cannot be contemplated from a proper point of view, unless we bear in mind that no edict has gone forth condemning man in general to die at three score and ten. The idea has arisen from an erroneous interpretation of the nineteenth Psalm, but a reference to the text, and to criticisms of the most learned commentators, will prove that it was composed as a lamentation in the wilderness by Moses, and that the complaint is that human life, from the sins and sufferings then, was reduced at that time to such a period. Further, we have evidence from day to day and year to year that human life, without pain or suffering, is often prolonged to a very considerably longer

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period. And without indulging in over sanguine expectations, it may be inferred that, with some care and attention, it may be very materially prolonged. Even the statistics of Insurance Companies prove that the expectation of life has been very materially prolonged by improvements in cities and villages. A right appreciation of this question is then an object of the highest interest, and lies at the root of the right disposition of time devoted to education, business and relaxation.

In the North American States, at least on the Atlantic coast, the nervous system is perhaps more unduly stimulated than in many other countries, and the effects are manifest in all the varied relations of life. There may be much energy and activity, but it is accompanied by a corresponding anxiety, and wear and tear of the constitution. A less severe drain on the nervous system, would, it is firmly believed, be accompanied with more happiness and a greater length of life. The compensating elements which the United States presents in other respects, enables it to compare favorably with many European States. But it is altogether a mistake to suppose that because population is less dense, sanitary improvements do not demand special attention. New York has its victims, as well as London, from defective architecture and sanitary measures. The National disease at Washington, where the suffering was so great that seven hundred individuals were injured there, was caused by bad drainage, and a year previous to the outbreak, the necessity of sanitary measures was strongly urged on the managers. A special cause is considered to have developed a peculiar aggravation, and infused arsenic both into the air and into the water.

Very favorable reports are given of the general condition of health on both banks of the upper district of the Mississippi. But that is no reason why we should not study existing evils that may arise in any State, or in any locality where the primary laws of health are either neglected or not sufficiently understood throughout the population. I cannot refer to any state or nation that I have visited either on this or the other side of the Atlantic, where there is not a great necessity for

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improvements that general education in Science can alone be expected to initiate and sustain in adequate proportion to the wants of the people.

Among the more prominent objects of sanitary improvement that ought to engage universal attention, wherever civilization and the improvements of modern architecture extend, the following may be more particularly enumerated:

1. An improved system of Ventilation, providing due channels for the supply and distribution of fresh air, and the discharge of vitiated air, exclusive of doors and windows. The conversion of all passages, stairs and entrances into channels for the supply and discharge of tempered air to and from the rooms to which they lead. The introduction of one flue or ventilating shaft, to be worked by heat, and capable of acting on all special occasions with power on any apartment where it may be desired. The provision of an upper discharging aperture, under the control of a valve, at or near the ceiling of every apartment. The preparation of glass models, both for adults and young persons, by which, with the use of visible vapors, all persons might be enabled to understand, with greater facility, the nature of the movements of air in modern public buildings and habitations, and the varied or peculiar modifications most applicable to individual structures.

2. The means of heating or cooling rooms by currents adapted to or selected from special positions. The communication of heat at as low a level as may be practicable in every apartment to be warmed. The production of as mild a source of warmth to the atmosphere as circumstances may permit, by stoves, open fire-places, steam, or hot water apparatus. The warming , to a certain extent at least, of the entering cold air, by the escaping warm air, especially during winter weather.

3. The provision of adequate means for the discharge of products of combustion by exclusive channels or increased ventilation, wherever a powerful artificial light is sustained by lamps, gas lights, or other means.

4. The communication of pure moisture to the air wherever it is heated, when extremely cold and dry.

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5. The right drainage and drying of the basement in all habitations, and the prevention of moisture from rising up the walls, wherever this may be necessary; a layer of brick or or stone, set in asphalt, or other materials capable of producing an equivalent effect.

6. The provision and preservation of pure water. Many are the wells contaminated by water from drains, cesspools, or imperfect precautions at a higher level. Where the use of iced water may contribute to prevent many impurities from being detected by the smell, which would otherwise become immediately manifest, the condition of the water should be frequently examined after heating it.

7. The introduction of a system of drying all animal or vegetable refuse, or excretion, wherever they are prone to run into putrefaction and contaminate the atmosphere or water in their vicinity. This may be effected by cold, by the addition of dried earths, charcoal or other absorbents. Various chemicals, such as lime, chloride of lime, and salts of iron may be used in addition, when requisite.

8. The provision of means of controlling, destroying, or absorbing noxious fumes from special manufactories.

9. The appointment of one or more inspectors of health for every city or populous district, and the better appreciation of the value of the services of the medical profession in preventing disease.

10. The formation of a code of health, and the passing of an enabling act that will give facilities to every city, town, village or populous district to introduce measures for sanitary improvement, and for promoting exercise and suitable recreation among the whole population.

These are the leading desiderata in sanitary improvement. Their influence on the health and happiness of the people can scarcely be overestimated. But how are they to be originated and sustained in individual districts, if education in science be not introduced in the Common School. They demand improvement in Architecture, Arts and Manufactures. They require the co-operation of public authority and individual

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intelligence at home, both among men and women. They aspire to a great national result, and the power of education in all its branches, should be brought to bear on a question so momentous to the rising community and the general prosperity of the State.

What is Education? Is it not intended to improve the condition of man, wherever his lot may be cast, and whatever duties he may be called upon to undertake in the course of his future life?

Is it not equally true that all men are largely interested in a knowledge of the material world; that ninety-nine out of a hundred make their daily bread by callings and occupations in which they have to deal with different objects drawn from this source?

Is it not also true, that during the last century, more especially, a clue has been obtained to the nature of the elements of which the globe is composed, that has been found of unspeakable value to man, and that it assists him, wherever it is known, in all his occupations?

Why then, should the nature of the elements of the material world not be taught and explained to all the youth of a land where freedom and intelligence prevail?

Why should this department of instruction not take its place with instruction in the general elements of language and literature?

What is the value of History, Philosophy, Literature and Science, if the grand results which they teach are never to be brought home with sufficient clearness and precision to the mass of the community, to assist them, where the most valuable practical assistance can be rendered in their daily toil and in their individual homes. Will Wisconsin look this question earnestly, practically and seriously in the face, and be guided by a truthful and careful enquiry as to the care it ought to bestow and divide between literary education, and education in relation to the material world in all its schools?

Let it be forever remembered, that every fact in science,

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explained in school, may be multiplied indefinitely by the observation of art and nature in future life.

But if the key be not given for the right interpretation, the power of perception is comparatively blind; the avenues to knowledge are locked up.

Ample experience has shown that, with a proper opportunity at the Normal school, and such other appliances as are slowly and surely coming into operation, the cost of such lessons as are contemplated, would not be such as to render them objectionable. A sum, varying from five to twenty per cent. on the expenditure on each school, would meet every essential requisite, and where that could not be obtained as an additional endowment, I am prepared to maintain that it should be secured by economizing the means at present expended on other objects.

This is no indefinite or shapeless question, that may be shuffled off without ceremony, and without consequences of vital importance to the whole community.

What would the Greeks and Romans have done if they had obtained the true key to the nature of the elements, which modern times have presented to man? How great was their progress in Literature, in Oratory, in Architecture, in Sculpture? But long was the interregnum, before the more refined observations and searching analysis of experimental enquiry gave man the power that Providence has permitted him to acquire over the elements of the globe. And he who opposes the extension of that practical knowledge, that forms the great and peculiar feature of the day, may be justly considered as opposed to those resources that improve the condition of man in every sphere of life, produce more food for the hungry, more clothing for the naked, and more occupation for all the in the varied walks to which humanity is called, and that more ample supply for the wants and necessities of life in general, without which man can never pause sufficiently to meditate on the higher destinies of his nature.

Wisconsin being pre-eminently an Agricultural State, (whatever other interests in Mining, Arts, and Manufactures may

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be intertwined with its leading source of wealth,) and the produce of agricultural operations being as various as the climate, the fertility of the soil, and the skill with which it is treated, it will be manifest, that every additional appliance that can be made to improve that skill, must tend to economize labor, and to increase production.

If we turn to the last report of the Superintendent of Education, presented to the Legislature, we shall find that 175,000 children are represented to be at school in this State, and if we reduce that number to 150,000, so that we may be largely within the mark, and estimate one-third of that number to be boys, who will look to Agriculture as the future occupation of their lives, is it not worth while to consider whether the interests of the State, and of the country, and of this Society, which is so much identified with the progress of Agriculture, would not be greatly promoted by making some arrangements in connection with the common schools, that would facilitate the acquisition by the pupils of a knowledge of the material world, and promote their disposition and power to profit by the improvements of others, and to become inventors also, wherever they have the talent and the opportunity?

Let it be recollected that of this army of 50,000 boys and young men, of whom not more than one or two in a hundred, according to the present rate of attendance, ever expect to acquire the time and opportunity of attending a State University, every one would be able to contribute his mite of improvement in his own field of labor and occupation, were such advantages afforded to him.

Further, let it also be recollected, that the same course of education which it is proposed for these 50,000 Agricultural pupils would be rendered equally important to those engaged in various arts and manufactures; while to all it would present a great basis of sanitary improvement, and of that knowledge of the human frame, and of the material world, that must sooner or later be incorporated in every system of education.

But, as we have already seen, the Agriculturalist is not only interested in the management of his Farm. The preservation

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of health, and in particular the structure of the habitation in in which he dwells, is no less important to him than to other men, and that preliminary education in Science which is recommended in the Common School, would be as useful to him in relation to these objects, as in reference to Agriculture.

Not only is this the case, but these questions and Agriculture have a mutual relation, which has been too often overlooked.

What thread runs through these numerous institutions and associations, that have sprung up so largely during the present century, under the name of Mechanic's Institutes, Polytechnic Schools, Schools of Art, Schools of Design, Agricultural Colleges, Sanitary Associations, Industrial Schools, and a multitude of others, down to those for Social Science, instituted both in England and in the United States, within the last few years? What key unlocks and unfolds all these institutions?

Education in the properties of matter is their great object and intention.

This, then, is a very wide and comprehensive educational question.

It is based on the primary wants of life, and intimately associated with the future progress of invention and discovery.

It is indissolubly linked with all those arts and manufactures that hold out the prospect of ameliorating the condition of man.

We cannot look to the power and instruments that save labor to the agriculturalist or to the mechanic, to the means that spread knowledge among men, that promote communication and commerce in every quarter of the globe, that assist in combining the fine with the useful arts, and engage even the rays of light as well as the electric sparks as laborers in the service of the present generation, without being touched by the peculiarities of the position of man in the globe that we inhabit, and the wonderful relations of that material world in which the providence of the Creator has placed us.

In proportion as the families of men are multiplied on the face of the earth, and spread over regions whose temperature differs more and more from that of their own frame, more skill

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ingenuity and activity are required to meet their natural and artificial wants.

Amid the many questions that press upon man's attention as a social, moral and religious being, whose transitory existence here is fitting him for a great hereafter, there is none perhaps more intimately associated with all his wants and faculties than his right relation to the material world in which he is placed, On this depends his existence, his comfort and his capabilities; his daily bread, his clothing and his habitation, the very materials of which his body is composed, and the maintenance of that mysterious connection that subsists between the spirit of man and the tenement in which it dwells.

The Omnipotent Creator has placed the material world entirely at his disposal, at least for the present, and if he does not draw from it all that it is capable of affording, let him consider his comparative indifference to the study of its nature, as well as the vague and ill-defined but practical fear and apprehension so often haunting his imagination, that there is not enough for all on the face of the earth, and that if some are comfortable, others must be more or less miserable.

All human actions are swayed by too great and ever-acting principles: The conservative, which leads us to accumulate power and production for our immediate use, defense and preservation. The dispersive or benevolent, by which we are taught to feel for the wants of our neighbors.

The fear that the Creator has not made enough for all, too often paralyses the best intentions. Despotism rises on one side, appropriating the labor of others, and greedily securing more than it needs. Want and penury on the other hand fall heavily on their victims, and throw a gloom on all the relations of life. Struggles arise all over the globe, and whether we look to Asia, Europe, Africa or America, material wants, material contentions, or material progress, occupying incessantly the hopes, the fears and the actions of men.

Too seldom do they stop to inquire what it is that they really need, what it is they can enjoy, and whether the

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Creator, in His providence, has not provided enough for all, if they would only study and obey His laws.

The wants of an increasing population, the call for emigration where it is over abundant, the intensity of pressure on the nervous system of anxious multitudes, to say nothing of fatigue and labor, all point out a great necessity.

If the invention of the printing press, of gunpowder, of the steam engine, the steamboat, the locomotive, the photograph, the electric telegraph, and, in short, the general development of power over matter, has arisen principally from the thought and consideration of a few men, and the accumulated experience of ages, what may not be anticipated when nations shall have taught the elements of science to hundreds of thousands and millions of the rising generation? What has the last hundred years alone effected in this respect?

A deep and settled conviction is universally manifest in all civilized communities, imbued with the spirit of investigation, that the system of education of former days is not sufficient for the wants of the present times.

There are men who can appreciate no humanity, no progress, no science. Nothing that does not reach them through the soothing influence of the golden dollar, or the impetuous arguments of a cannon ball. But a constant progression from day to day, and from generation to generation, is the order of creation, the stamp of Omnipotence impressed on all his works.

In every city, in every village, there should be a society, an institution, and a building, however humble, wholly devoted to Science, and in it such provision should be made, as will give the adult population the best illustrative experimental information available, on all matters connected with the progress of Science, invention and discovery, that may be most interesting to them. An experimental association, with a library and museum, in connection with the State Agricultural Society, would be a great acquisition to the adult. A select series of elementary models, and experiments in schools, such as would introduce all pupils to the elements of the Arts and Science, and admit of more extended instruction, to those who

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are to be sent to the University, is the great and paramount desideratum.

It would then no longer be said that the study of the material world is too much neglected.

On this neutral ground all men can meet with freedom, with faith, hope and charity, and in meek dependence on the Giver of all Good.

Here conscientious differences do not interfere, nor meddle with the religious views of individuals.

Here no political jealousies, feelings, or aspirations should divide man from his fellow man.

Let it be sacred as one homage, at least, in which all men can join before the great Creator, and let it blossom with the fragrance of perpetual youth, calm and majestic, certain and sure as the rising and setting sun, deep in its influence on the human heart, and bright and pure as those stars that silently appear in view as the great luminary disappears, and are known to us only by the light which they emit in traveling through that infinity of space and distance, which the human mind cannot grasp.

Viewing man in all his relations, in a state where freedom of conscience is secured in religion, where education is the birth-right of youth, and where the star of liberty shines equally on all its citizens, what would be a deed of greater moral grandeur than to throw open the door of Science to all its population, to read the alphabet of nature—of the material world, in addition to the alphabet of words, and the foundations of Literature and Justice, History, Philosophy and Taste. Then indeed would the masses feel that their education was identified with that of the rich and opulent, the earth would bring forth her fruits to every family—abundance would be increased — suffering diminished — life would be prolonged — every thing would be better understood—existence less hurried —and the knowledge of the power, the wisdom and the benevolence of the Creator be increased among men, with the increased manifestations of His works.

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PRESENTATION OF THE PRIZE BANNER.

The presentation of the Prize Banner referred to in the Report of the Executive Committee, took place at the Speaker's Stand on the Fair Grounds, in the afternoon of Friday, September 28th—Secretary Hoyt officiating on behalf of the State Society, and S. R. Gunn, Esq., responding on behalf of the Pierce County Society.

The Banner was made of the richest materials and presented a blue and a white side. On the blue side was an elegant representation of Ceres, sitting in the midst of stirring industrial scenes, immediately surrounded by the products of Agriculture, and leaning upon the shield of the State. On the other side, in letters of gold, was the following inscription, encircled by a wreath of wheat heads and flowers:

"Prize Banner awarded by the Wisconsin State Agricultural Society, to Pierce County, for Best Exhibition at the State Fair of 1860."

In presenting the Banner, Mr. Hoyt spoke, in substance, as follows:

Mr. Gunn and Gentlemen of the Pierce County Agricultural Society: You are already familiar with the circumstances which have brought us together here, as delegations of State and County Societies, in the presence of this vast concourse of the people of Wisconsin.

The earnest desire of the State Agricultural Society to promote the great objects for which it was established, aided by the means tendered by the citizens of Madison, have resulted in the offering of a costly and beautiful Banner to

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that County Society, the people of whose county should make the largest and most creditable contribution of articles to this Exhibition.

The Committee of able and impartial gentlemen who were chosen to make a careful examination of the individual and aggregate exhibitions of the several counties in competition, have faithfully performed the arduous and delicate duties assigned them, and have awarded the Banner to the County of Pierce.

In accordance with this decision of this Awarding Committee, it becomes the duty, as it is also the high pleasure of the State Agricultural Society, to deliver into your hands, as the authorized representative of the Agricultural Society of Pierce, the Banner which has been provided for the victorious county.

For a county of so recent organization, and situated in a latitude which has heretofore unjustly, but yet very generally, been, of itself, considered a sufficient barrier to the settlement of its fertile and beautiful lands, to so promptly enter the list with the long settled and wealthy counties of the State is high proof of a resoluteness of spirit, energy of character and nobleness of ambition which must have challenged the admiration of even her competitors.

For scarcely more than five years have you had a separate county organization; and only last year did your Agricultural Society begin an independent career. Yet to-day you have won the proud distinction of the BANNER COUNTY of Wisconsin!

Sir, you have a right to be proud, not only of the soil and climate, which, by the aid of an intelligent industry, have yielded such products as in yonder Agricultural Hall have been the praise of the multitudes who have beheld them, but likewise of the noble people whose interests and honor you represent on this occasion. The State Agricultural Scociety and the citizens of the whole State have witnessed with high gratification the enthusiasm and energy with which you have engaged in this spirited contest for the peaceful honors of a superior industry, and they are proud of your success.

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And now, sir, on behalf of the Wisconsin State Agricultural Society, and of the citizens of Madison, I have the honor to present, through you, to the Agricultural Society of the County of Pierce, this Banner, alike honorable to the public spirit of its donors, the skill of the artist who executed it, and the superior enterprise of those to whom it has been awarded.

Worthily won, I trust that the future of your County will give permanent sanction to the wisdom and justness of the award. To this end you will bear in mind the spirit and zeal of the noble County of Winnebago, which shares with you the honors conferred by the Awarding Committee, and which, by the results of this year's exhibitions, will be stimulated to yet more vigorous competition in the time to come. Let it be yours to *preserve* as well as to gain—to transmit to those who come after you this symbol of your present triumph with not less of meaning and inspiration than it has for you this day.

On receiving the banner, Mr. Gunn made the following response:

Dr. Hoyt and Gentlemen of the Wisconsin State Agricultural Society: The people of Pierce County were early apprized of the fact that the citizens of Madison had offered through your Society, a Prize Banner to that county in the State (excepting Dane) which should make the best exhibition of agricultural products at the State Fair the present year. With this stimulus before us, although one of the youngest counties in the State, we resolved to enter the list of competitors and take the chances of success or failure. In either event we felt that our labor would not be wholly in vain; since the opportunity to demonstrate the capacity of our county for agricultural products and to un-deceive those who supposed we were so far towards the frozen regions, that the climate could not bring the products of the soil to perfection, would be an abundant reward.

While southern Wisconsin, Illinois, Iowa, Indiana, Ohio, and, in fact, most of the States of the Union have suffered from frosts, blight, drought and mildew, during the ten years of my residence there, I have never known Pierce County to fail in

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bringing forth the most bountiful crops—crops, too, of a quality which we are more confirmed by the decision of to-day, are not, nor can be surpassed by any section of country north or south of us.

The residents of Pierce County have had to contend with all the hardships of a frontier life, yet they have been industrious, contented and happy; and while blessed with such abundant harvests as they have gathered from year to year,

> "They envy not the clime that lies
> In ten degrees of more indulgent skies."

Six years ago Pierce County was unknown in the geography of the State. The territory now within her limits, then belonged to St. Croix County, which reached from Chippewa County on the south and east to Lake Superior on the north; and from the then territory of St Croix County has sprung the County of Pierce, rich in its soil, climate and in its diversified prairie and woodland, its sparkling streams and valuable water-powers. St. Croix County may well be proud to be the mother of Pierce, since the development of our agricultural resources; and she is well worthy of her progeny, for I know of no section of country that has the natural advantages desirable for quiet independent and happy homes, which the valley of the St. Croix offers to those seeking homes in the West.

While our farmers have been busily engaged in producing their crops, they have also continued to improve and enlarge their farms; and this summer alone seven thousand acres of prairie land have been broken up and prepared for crops the coming year.

Coming, as we do, from the far north, representing a population of less than five thousand, and contending with difficulties of transportation from so great a distance, the honor of having won this beautiful Banner, is one of which we may well be proud; and with you, sir, I trust that it will prove an incentive to further effort on the part of our people to maintain the credit of our County at further exhibitions of the Society.

Sir, I am proud on behalf of Pierce County to accept this magnificent Banner, so generously offered by the citizens of

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Madison. Permit me to thank you for the happy manner in which you have presented it, and to assure you and them that it will be highly appreciated and gratefully cherished by us—that this occasion will be remembered with pride and satisfaction, and that the success of to-day will be a stimulus to our people to preserve the laurels they have here won, by industry and perseverance in the future.

The presentation of the Silver Pitcher and Silver Goblet, awarded to Messrs. E. W. Edgerton, of Summit, and William Smith, of Somers, respectively, for best and second best Farms, took place immediately after the presentation of the Banner.

The Address on behalf of the Society was made by Gen. David Atwood, Treasurer, and brief responses were made by the worthy gentlemen receiving them. We regret that copies of their remarks have not been furnished for publication.

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ELECTION OF OFFICERS FOR 1860.

Pursuant to a notice published by authority of the Executive Committee, the Life Members of the Society met in the State Agricultural Rooms, at 8 o'clock on the evening of Thursday, September 27th, for the election of officers for the ensuing year.

Meeting called to order by B. R. Hinkley, President.

D. R. Coit offered the following resolution:

Resolved, That in order to secure a fair expression of the will and preference of the Life Members of the Society who are really entitled to exercise the right of suffrage therein, each member who may vote, be required, at the time of depositing his ballot, to give his name to the Secretary, and that none but *bona fide* Life Members, who have paid for their membership, be allowed to vote at this election.

Which was adopted.

At this stage of the proceedings, the Rooms of the Society being too crowded for the comfort of those present, the meeting adjourned to the office of the Secretary of State, where the election was duly held, with the following results:

President—B. R. HINKLEY, of Summit.

Vice President—1*st District*, E. B. WOLCOTT, Milwaukee.

" 2*nd* " NELSON DEWEY, Lancaster.

" 3*d* " BERTINE PINCKNEY, Rosendale.

Secretary—J. W. HOYT, of Madison.

Treasurer—DAVID ATWOOD, of Madison.

Additional Members of Executive Committee—H. M. Billings,

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of Highland; J. V. Robbins, of Burke; C. Loftus Martin, of Janesville; B. Ferguson, of Fox Lake; David Williams, of Springfield; S. S. Daggett, of Milwaukee; O. F. Maxson, of Prescott.

J. V. Robbins declined to serve, and H. P. Hall was elected to fill the vacancy thus created.

Ex-Presidents, ex-officio members of Executive Committee—E. W. Edgerton, of Summit; Harvey Durkee, of Kenosha; J. F. Willard, of Janesville.

On motion, the meeting then adjourned *sine die.*

J. W. Hoyt, *Secretary.*

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SYNOPSIS OF ENTRIES FOR PREMIUMS.

1860.

Counties,	11
Farms,	7
Field Crops,	15
Horses, Jacks and Mules,	256
Cattle,	169
Sheep,	107
Swine,	33
Poultry,	15
Field Crops,	38
Farm and Garden Products,	355
Fruits and Flowers,	200
Dairy and Household Products,	175
Domestic Manufactures,	60
Operative Machinery,	116
Farm Implements,	31
Manufactures, other than Domestic,	124
Needle Work,	77
Fine Arts,	3
Miscellaneous and Discretionary,	158
Plowing Match,	8
Ladies' Riding,	7
Trotting Match,	13
Total,	2,008

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REPORTS AND AWARDS OF PREMIUMS.

REPORT OF COMMITTEE ON COUNTIES.

To the Executive Committee of the Wisconsin State Agricultural Society:—The undersigned, selected as Judges to award the "Banner" offered by some twenty citizens of Madison, "for the largest and most creditable contribution made by the citizens of any one County, exclusive of Dane," have performed the duty assigned them, by carefully examining the various contributions from all the Counties that have been properly entered in competion for such Banner, and they have awarded it to the County of Pierce. It is but just, however, to say, that but for the published instructions of the Society, by which we were "required to base our decision upon such circircumstances of population, remoteness from the locality of the Fair, &c., &c., as will ensure equal advantage to all the Counties in competition," we should have awarded the Banner to the County of Winnebago.

The contributions from this County were very large and very fine in Horses, Cattle and Machinery and very creditable in every department. The contributions of grain and vegetables from the County of Pierce far exceeded those of any County competing for the Banner, or of any County exhibiting at the Fair. In the department of Fine Arts, this County was well and creditably represented; it also contributed something to nearly every department; so that after we consider that this County has a population of only 4,667, that the County of Winnebago has a population of 23,788, and also that the former is distant from this place about 280 miles, and

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the latter only one hnndred miles, we feel compelled, under the instructions above recited, to award the Banner to the County of Pierce.

The undersigned deem it proper to add, that the contributions from all the Counties, in every department, were the largest and best ever before exhibited on a similar occasion in the State, and that it is in all respects a Fair of which the people of this young State may well be proud.

Respectfully submitted,

GEO. B. SMITH,
M. M. DAVIS,
J. H. WARREN.

Madison, Sept. 28th, 1860.

REPORT OF COMMITTEE ON FARMS.

To the Executive Committee of the Wisconsin State Agricultural Society: The undersigned having been appointed Committee of Judges upon Farms entered in competition for premiums, with instructions, that in our award we "will have more regard for judicious and superior tillage, proper rotation of crops, and general good management, calculated to be economical and profitable, than, to costly buildings or large outlays of an amateur or fancy nature," and that the examinations shall be made between the 15th of June and the 15th of July, have discharged that very pleasant duty, and would respectfully report: That there were six Farms entered in competition, owned by the following named gentlemen: C. S. Kneeland, of Waupun, Dodge County, E. W. Edgerton, of Summit, Waukesha County, Peter Peffer, of Pewaukee, Waukesha County, William Smith, of Somers, Kenosha County, H. P. Hall and J. V. Robbins, of Burke, Dane County; That the Committee commenced its labors upon the farm of Mr.

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Kneeland, and proceeded with its examinations in the order indicated below:

MR. KNEELAND'S FARM.

This farm is located about half a mile from the village of Waupun, in the County of Dodge. It consists of ninety-one acres, and it is about six years since Mr. K. commenced its cultivation. Its location is very beautiful, and the soil is of a superior quality of oak openings. The farm is in a good state of cultivation, presenting fine meadow land, splendid wheat fields, and a fair prospect for corn, fine potatoes and good pasture and woodland. The management of the farm shows good economy, and it will require but a short time, with Mr. K.'s practical industry, to make his home a sort of paradise on earth. The site for his dwelling and outbuildings is, hardly surpassed in real beauty and loveliness, by any spot within our knowledge; and the splendid site has been improved by putting upon it remarkably tasteful and conveniently arranged buildings; not large and costly, but neat, economical and useful. The house is well arranged for making easy the duties of a farmer's wife, which important consideration is too often overlooked.—The outbuildings are also after the same style—presenting economy of expenditure and great practical usefulness. In these buildings we find a place for everything, and everything in its place. The barn, the horse barn, the carriage house, the cattle sheds, give indication of a desire to protect his animals and his crops, as well as to raise them. This is a matter that many of our farmers greatly neglect, but we apprehend that almost any one would be stimulated to a right action in this direction by an examination of the premises of Mr. Kneeland. Even to the pig pen, do we find the same taste displayd. His arrangement for keeping hogs is so perfect, that even the life of a porker is rendered tolerable.

With such a farm—such conveniences, and such means as Mr. Kneeland has gathered around him by dint of his own industry and economy—for he told us that everything we saw

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in the way of improvement had been earned on the farm—a family can hardly fail to be happy; and in this case every appearance indicates that not only the man, but every department of the household, fully appreciate the beauties of their home, and make the best use of them.

MR. EDGERTON'S FARM.

This farm is located in the town of Summit, and consists of 820 acres, of excellent land—being rich openings. The soil is a sandy loam, rendering it quick as well as productive. Mr. E. commenced upon this farm in 1837, and the surroundings clearly show that the intervening time between then and the present has been well spent in its improvement. Everything has been done under his immediate supervision, and no inconsiderable portion of the work is the result of the labor of his his own hands; and while his hands have been abundantly able to execute, the practical mind has been active in the planning and direction of every improvement. In the management of this farm, and in all its appointments, we see the practical, the skillful, and the systematic farmer. Commencing at so early a day, most of the fencing is made of rails, that will, no doubt, give place to a good board fence at no distant day. But any common board fence sinks into insignificance when compared with Mr. E.'s rail fences. The most vicious animal would give up all hope of jumping over, or getting through it, when he had approached within ten rods of it. It is not only well put up, but it is most admirably staked up. The whole farm is enclosed with it, and then sub-divided into twenty acre lots. Upon this farm there is now growing 115 acres of wheat, and oats, corn, and potatoes, in proper proportion, all presenting the most promising prospect for an unusually rich harvest; and woe be to a weed that attempts to lift its head above ground on these premises. Mr. E. does everything upon a perfect system, keeping an account of every action, and its result. He furnished the committee with the manner of cropping every sub-division of his farm, for the last five years; and the results of his efforts prove,

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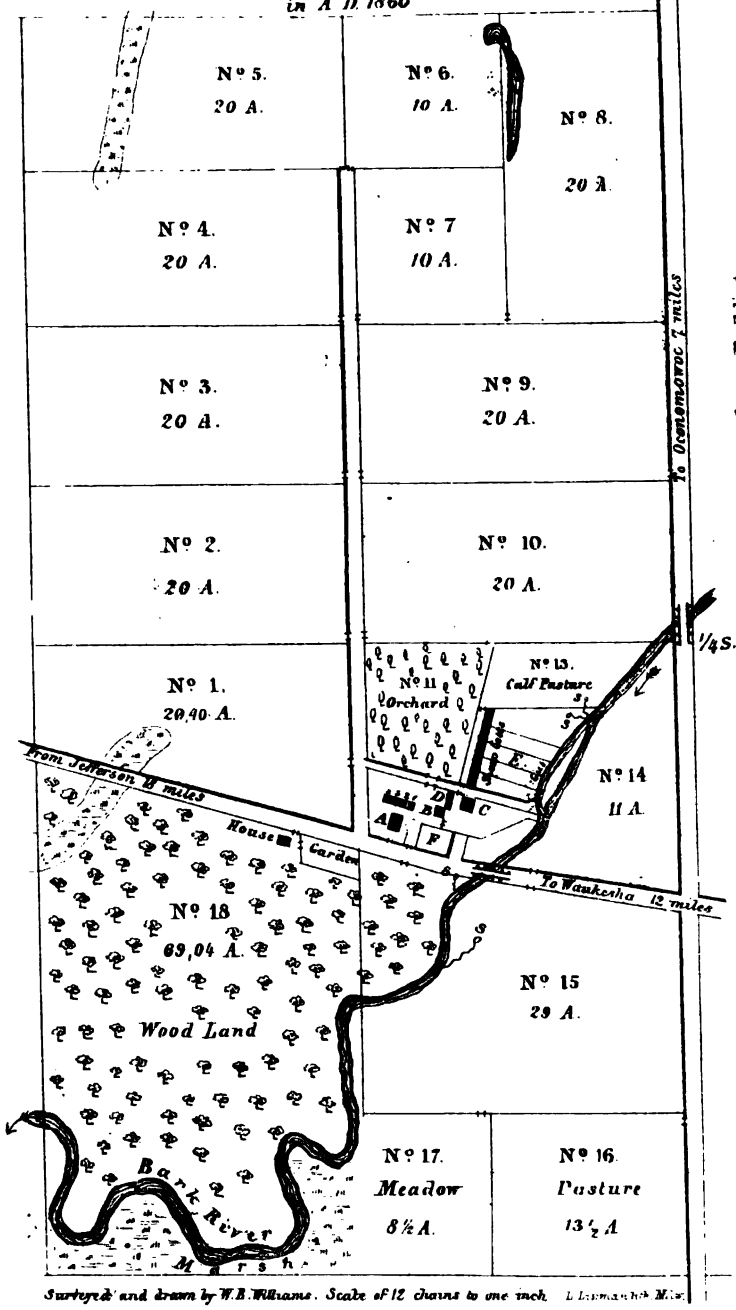
E. W. Edgerton's Farm in the Town of Summit, Waukesha Co. Wis.

Awarded the first Premium by the Wisconsin State Agricultural Soc.y in A. D. 1860



Surveyed and drawn by W. B. Williams. Scale of 12 chains to one inch.

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most conculsively that systematic and intelligent farming is the most noble calling within the reach of man. Mr. E. has not only given close attention to the cultivation of the soil, but he has attended to the improvement of his stock, till we find that his horses, cattle and sheep, rank high among the best in the State. In fact, he is now, while in the prime of life, reaping the full benefits of having devoted his early years to the thorough cultivation of his own soil, and of his own mind. May he long live, and may his example and success stimulate the young men of the State to go forth, take up the rich, uncultivated lands, and do likewise.

We embody in this report, the statement of manner of cultivation, rotation of crops, &c., upon this farm, furnished the Committee by Mr. Edgerton, which may prove not only interesting, but useful to our agricultural friends. It is as follows:

Lot No. 1—20 Acres—Standing Water.

1855...Hay crop of Timothy and Clover.

1856...Pastured.

1857—Pastured. East half manured, 30 loads to the acre, and spread in the fall.

1858...Spring ploughed and sowed with oats; balance of the field manured in the fall, and all fall ploughed.

1859...Club Wheat and seeded with Timothy, Red Top and, Red and White Clover for permanent pasture. Owing to the drouth the seeding failed; fall ploughed.

1860...Club Wheat, and seeded same as last year.

Lot No. 2—20 Acres. Dry Lot.

1855...Corn on Clover ley.

1856...Club Wheat, and seeded with Clover.

1857...Clover crop turned under in June and sowed with Winter Wheat in September following.

1858—Winter Wheat killed out; Spring ploughed and sowed with Club Wheat, and seeded to Clover.

1859...Club Wheat on Clover sod (ploughed last fall), and seeded with Clover; seeding failed on account of the drouth; fall ploughed.

1860...Club Wheat and seeded with Clover.

Lot No. 3—20 Acres. Dry Lot.

1855...Clover hay and seed crop.

1856...Corn on Clover ley; Spring ploughed.

1857...Club Wheat and seeded with Clover.

1858...Corn on Clover ley, (Spring ploughed.) Fall ploughed.

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1859...Club Wheat and seeded with Clover; seeding killed by drouth; Fall ploughed.

1860...Club Wheat and seeded with Clover.

Lot No. 4—20 Acres. Standing Water.

1855...Oat crop and seeded to Clover.

1856...Pasture.

1857...Pasture.

1858...Pasture.

1859...Oat crop on the sod, (Spring ploughing.) Fall ploughed.

1860...Club Wheat. N. B.—Should have been seeded to Clover, but was too poor to *buy* seed, having lost all my last year's seeding and seed crop by the drouth.

Lot No. 5—20 Acres; 15 Acres under cultivation, 5 woods. Standing Water.

1855...Oat crop and seeded to Clover; has been pastured to this date; will be fall ploughed for Oats in 1861.

Lot No. 6—10 Acres. Standing Water.

1855...Pasture.

1856...Oat crop on the sod, (Spring ploughing.) Fall ploughed.

1857...Club Wheat and seeded with Clover.

1858...Hay crop and seed.

1859...Pasture.

1860—Oat Crop on the sod, (Spring ploughing;) seeded with Timothy, Red Top, Red and White Clover for a permanent pasture.

Lot No. 7—10 Acres. Dry Lot.

1855...Pasture.

1856...Oat crop on the sod, (Spring ploughed.) Fall ploughed.

1857...Club Wheat, and seeded with Clover.

1858...Clover hay crop and seed.

1859...Corn crop on Clover ley, (Spring ploughed.) Fall ploughed.

1860...Club Wheat. N. B.—Should have been sowed with Oats this year, and *next* with Wheat and seeded to Clover, but being desirous of doing my part towards *redeeming Wisconsin*, "went in on the Wheat."

Lot No. 8—20 Acres. Standing Water.

1855...Pasture to this date; contemplate fall ploughing for an Oat crop in '61.

Lot No. 9—20 Acres. Dry Lot.

1855...This field had been several years in pasture, with No. 10, the field below, hot having been divided at the time; was manured in the years 1851 and '52 with 1200 loads of manure; in the Spring of '53 was subsoiled with the Michigan Double Plough, using a four-horse team and turning a furrow 10 inches deep, depositing the manure in the bottom of the furrow and bringing the subsoil to the surface, and planted to Corn.

1854...Club Wheat and seeded to Clover.

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1855...Hay crop and Seed crop.
1856...Hay crop and Seed crop.
1857...Corn on Clover ley.
1858...Club Wheat and seeded to Clover.
1859...Hay crop; Seed crop failed on account of the drouth.
1860...Club Wheat; Clover had all killed out on account of the drouth and hard pasturing of the past season.

Lot No. 10—20 *Acres. Running Water.*

This field served same as No. 9 up to 1854, being part of same field.
1855...Hay Crop. Fall pastured.
1856...Clover ley. Ploughed in June.
1857...Oats and Clover. Fall ploughed.
1858...Club Wheat and seeded to Clover.
1859...Hay crop. Seed crop failed on account of drouth.
1860...Corn on Clover sod. Clover failed on account of drouth and hard pasturing of last season.

Lot No. 11—6 *Acres. Dry Lot.*

This field has been for the past 4 years in Corn and Root crops; was highly manured in 1856 and 1858.
1860...Club Wheat and seeded to Clover.

Lot No. 12—5 *Acres.*

This block contains the Buildings, Yards and Gardens.

Lot No. 13—3*Acres. Running Water.*

Calf pasture; in Kentucky Blue Grass and White Clover.

Lot No. 14—10 *Acres. Running Water.*

1855...Pasture; and has been for several years.
1856...Pasture; highly manured in the Fall and ploughed under.
1857...Oat crop on the sod. Fall ploughed.
1858...Club Wheat and seeded with Timothy, Red Top, and Red and White Clover for permanent pasture.
1859...Pastured; overstocked.
1860...Pastured.

Lot No. 15—20 *Acres. Running Water.*

This field was manured in 1853 with 30 loads of manure to the acre; manure spread in the Spring. Has never been seeded except what was applied in the manure. Has been used as a permanent pasture to this time. West half of lot was top dressed in the Fall of 1858, and east half in the Fall of 1859.
1860...Pasture.

Lot No. 16—8 *Acres. Water, Wet Seasons.*

North part of this field was originally in No. 15, and was treated the same; was divided in the spring of 1858. South part was cleared of underbrush in

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1857, and has never been ploughed; too wet for anything but a grass crop in anything like a wet season: intend underdraining.
1860...Pasture.

Lot No. 17—12 *Acres. Running Water.*

This field is natural meadow or hay marsh; was surrounded on the sides with a four foot open ditch in 1847, which neither improved the quantity or quality of the grass; intend at some future day, to try the experiment of underdraining every sixteen feet, leading to the river.

Lot No. 18—65 *Acres. Running Water.*

Woodland, mostly white oak timber. Never has been cut from except for hewing timber, till the past winter.

MR. PEFFER'S FARM.

This farm is located in the town of Pewaukee, in Waukesha county. It consists of eighty acres, and presents almost every variety: high land and low land, good land and poor land, dry land and wet land; but under the skillful treatment of Mr. Peffer, who has a strong arm and a willing hand, the different elements will be made to subserve each other, until, in a short time, the whole will present a noble specimen of the results of honest toil, skillfully directed. This man, Peter, as he is familiarly called, is a German by birth, having immigrated to this country when fourteen years of age. He became a carpenter and joiner, which trade he followed several years, with reasonable success, when, in 1845, all of his earnings were destroyed by fire, leaving him to begin anew; but being able bodied and industrious, the struggles with the world without means, had no terrors for him. He went on, following his trade and farming alternately, according to circumstances, until now he presents a farm in competition with the best farms in the State.

While this farm does not present the attractions of some others, the committee derived sincere pleasure and satisfaction, and we may add, profit, from visiting it. Mr. Peffer is reclaiming the marshes by the draining; improving the upland by hauling the low lands upon it—growing hedges for his permanent fences; in fact, he has his plans fully matured, and most of them in a state of progress that in a short time will convert

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an eighty-acre farm which, in its native state, was very uninviting, into a most attractive and desirable home. Mr. Peffer is a practical man, possessing great energy of character, and adaptability to circumstances, and we predict for him a prominent position among the best agriculturalists of the State at no distant day. He is very interesting in his description of personal incidents. He showed us the wheelbarrow which he made himself, years ago, and remarked, that that, pushed with his own hands, constituted his first farming team. He has had considerable reputation for some years, and most deservedly so, as a nurseryman and fruit grower. We must here relate an incident in connection with this subject, which goes very far to illustrate the benefits of agricultural societies; and we cannot do better than to tell the story in his own language, as nearly as possible. He said that he was called, by many, a nurseryman and fruit grower, and he would tell us how he came to be one. In 1851, without any particular knowledge of the subject, he grafted a wild plum tree, and in 1852 it bore some beautiful fruit. He entered this fruit at the State Fair, and the first premium was awarded to him for it. This encouraged him to go on—to study and experiment, and the result has been attended with good success. "But," says Peter, with animation, "if it had not been for the State Agricultural Society, and for that premium on plums, I should have been nothing to-day but Peter Peffer, the carpenter." This is one of the illustrations of the benefits arising from agricultural societies; and we rejoice to find that Peter considers his present calling a great elevation from that of a good carpenter, as he no doubt was. It is so; and proud may be any man, of whatever position, who becomes a practical and successful tiller of the soil.

MR. SMITH'S FARM.

This farm is located in the town of Somers, in Kenosha county, nine miles from Racine. Mr. Smith is a Scotchman by birth, having landed in this country in 1834, coming to the ter-

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ritory of Wisconsin soon after, and stopping for a time in Milwaukee. In 1836 he located on the farm upon which he now lives, and has ever since devoted himself to farming, and with excellent success. His farm, at present, consists of 280 acres, 200 of which is under a good state of cultivation, the balance being timber land. The portion under cultivation is upon prairie—of an excellent soil naturally, and which has lost nothing of its excellence under the judicious management of Mr. Smith. His farm is subdivided into lots of 28 acres each, and each lot is provided with a good spring, rendering it convenient for pasturing stock in its regular turn, and a regular rotation of pasturage, meadow, and tillage is kept up with the various lots. The fencing upon this farm is mostly of boards. Five boards with a cap of scantling about two by five inches. These caps are spiked firmly to the posts, and where the ends come together, they are coupled with a scrap of iron some four inches long, and spiked through the cap pieces into the posts. This makes the fence remarkably firm, and protects the lots against the most vicious animals with entire certainty. We are thus particular in this description, as it was new to us, and we were very favorably impressed with it, and would be glad to see the example followed by others. The crops upon this farm are very fine, and the appearance of the whole farm gives abundant proof that the director of the operations upon it, is worthy to rank with the first farmers in the State. Mr. Smith's herd of cattle is among the best, as a whole, that we have seen in the State. In his buildings Mr. S. has shown good taste, having in view both economy and utility.

MR. HALL'S FARM.

This farm is located in the Town of Burke, in Dane County, and consists of 644 acres, including every variety of land prairie, to woodland and marsh land—and everything necessary to make an excellent grain and stock farm. These superior natural advantages are being well improved by Mr. Hall.—About three hundred acres of this farm is in crops; 100 acres

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is in wheat, 70 acres in corn, 40 acres in oats, 38 acres in tame grasses, and the balance is devoted to a general variety of garden vegetables, a large portion of it to carrots. It is but four years since this entire farm was in a state of nature. We find the buildings all in excellent condition, comprising every convenience of an old New England farm that has been improved an hundred years. Excepting the absence of orchards, the farm presents every appearance of an old country. Mr. Hall is diversifying his farm to a good degree. He depends upon no one thing to make his farm profitable; but is developing each branch of agriculture with zeal, system and apparent success. His horses are good substantial animals, without running specially to fancy; his cattle are all good, and means are being used for their improvement. He has something over fifty cows, and also a large lot of hogs; and everything is kept in a manner that indicates good skill and economy in his operations.

The committee were shown one thing that seems to indicate the great importance of a change of seed. This was a cornfield, all planted on the same day, with the Webster corn, being a white flint. A part was planted from seed raised by Mr. Hall upon the farm, the balance from seed brought from Massachusetts this spring, but all of the same species of corn, The difference is very marked. That growing from eastern seed is at least one quarter larger, and in every way more promising. Should the same difference continue to the harvest, we should expect one quarter more yield from an acre of that corn than from that planted with home raised seed. This is a matter worthy of attention, and we trust that Mr. Hall will make known the result of this experiment. He is doing a noble work in reclaiming a marsh on the back part of his farm. Although he has but just commenced the system of operations that he intends to pursue, still the effect has been very marked in its improvements. Under this mode of operations there can be but little doubt but land that a year or two ago was so wet that it was useless, will be made the most valuable land on his farm, in a few years.

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MR. ROBBINS' FARM.

This farm is located in the immediate neighborhood with that of Mr. Hall's, and presents a specimen of a magnificent farm on a large scale, and one conducted with great energy and success. It consists of something over 700 acres of choice land, and presents a fine variety, fitted for tillage and dairy purposes. It is but four years since the improvements upon this farm were commenced, but they have been vigorously pushed, the plans well conceived and thoroughly executed. Mr. R. has this year some 500 acres devoted to the various crops. Over 200 acres to wheat, 75 to corn, a large amount of rye and oats, and some 70 acres to the various root crops, about 40 acres of which is carrots. He keeps a large stock, and for its use deems his carrot crop the most profitable one he cultivates. Where farming is done on so large a scale, it is very rare that every thing is so well done and done in so good season as it is upon this farm. Much pains have been taken to procure all the conveniences for doing work, and every thing is kept in its place and in order. The vast improvements that have been made here in the short time that Mr. R. has been at work, are truly wonderful. A person could hardly believe it possible.

Mr. R. takes much pains with his stock, and has many choice specimens, and is striving to introduce still further improvement. He has quite a number of full bred Alderney cattle. These he deems his very best cows. He carries on the Dairy business extensively, having about 150 cows. Having every facility for it, his dairy produces butter and cheese of the very best quality, and it finds a ready market at the highest prices. This department seems most admirably managed, and will no doubt prove a profitable enterprise. His hogs are also very numerous; but his conveniences for taking care of them are so perfect, that the usual annoyance of these animals are unknown upon these premises. The barns are capacious and convenient. In short, no convenience in the way of buiildings seems to have been overlooked.

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The site for the dwelling house is one of surpassing loveliness. The house stands upon a high eminence, overlooking the entire farm, and we might almost say, the entire country around as far as the eye can see. A most perfect and delightful view of the city of Madison is presented, with all the prominent public buildings, including the University and the Insane Hospital. The landscape scenery from this residence we have never seen equalled fram any farm house. At this season, when the groves are in full foliage, and the grain fields are presenting their golden hue, it is very difficult to imagine anything more magnificently grand, or exquisitely lovely, than the panoramic view presented to the eye from this delightful spot. No painter can begin to do it justice; no description can give any adequate idea of it; nothing but witnessing it can fully appreciate it.

The committee have given an imperfect sketch of the farms submitted to it for examination. It has been a source of great pleasure to each member of the committee, to find farms so well entitled to praise, as are those that were visited. It is to be hoped that a larger number of the excellent farms in Wisconsin will be entered in competition, when another opportunity shall be offered; and we trust the system of offering premiums upon farms, will be continued by the State Agricultural Society, as it would seem to your committee to be well calculated to stimulate our farmers to redouble their efforts in the cultivation of the soil.

We cannot close without expressing our obligations to the many farmers, and their excellent families, who have bestowed such attentions upon the committee, as have rendered their visit one of extreme pleasure as well as of deep interest.

The great prospect for crops, of every description, in our State, is a source of heartfelt congratulation. The wealth of Wisconsin is in the soil; and it does seem as though providence was developing the agricultural resources of the State with an especial view of relieving the financial embarrassments of our people. The crop of this year, if vouchsafed to harvest

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in accordance with present prospects, will greatly elevate Wisconsin in the commercial world.

After the examinations of the farms, the committee held a session and award, with entire unanimity, the first premium, a Silver Pitcher, to E. W. EDGERTON, of Summit, and the second, a Silver Goblet, to WILLIAM SMITH, of Somers.

All of which is respectfully submitted,

B. R. HINKLEY, BENJ. FERGUSON, DAVID ATWOOD. } *Committee of Judges.*

MADISON, July 24, 1860.

FIELD CROPS BY THE ACRE.

The Executive Committee have had, as usual, occasion this year to regret the lack of interest in this department of the Premium List. The amount of labor required in order to fulfill the conditions imposed, is certainly not large enough to prevent any enterprising farmer from entering and reporting his crops; and surely the pride which such farmers must feel in their profession and in the State of their adoption, should operate as a sufficient incentive.

The following awards were made by the Committee at their meeting in December:

Best acre of Corn, More Spears, Black Earth,	$15
2d " " Eli Stilson, Oshkosh,	10
Best ¼ acre of Carrots, Eli Stilson, Oshkosh,	10

Reports were also made of excellent crops of wheat, barley and potatoes, but their informality prevented the awards which would otherwise have been made.

Mr. Geo. P. Peffer, of Pewaukee, claims to have grown 53¼ bushels of Club and 37 25-60 of Fife Wheat, 192 2-7 bushels of Purple Chili Potatoes, 53½ bushels of barley, and 88 bushels of King Phillip Corn on one acre, each.

And Mr. Jas. K. Carr, of Medina, Dane county, reports 42

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bushels per acre of Canada Club Wheat, 321 bushels, per quarter acre, of Carrots.

Below will be found the material portions of the reports which won the above prizes.

CORN—STATEMENT OF MORE SPEARS.

The soil is a rich mellow, crumbling, sandy loam. The black mold of the same having been made from the high bluff which lies on the north side of the field.

The subsoil is a porous sandy loam. One half of the ground was plowed twice in the spring, but could see no benefit from the extra labor. Plowed in thirty loads of manure, dragged and marked the rows three feet apart each way. Planted on the 14th day of May with the Benton variety, three or four kernels in each hill; worked in the corn with a cultivator, and hoed it twice. On the 5th day of September the corn was ripe enough to be cut up.

There were 229 baskets of corn in the ear, which weighed, when dry enough to shell, 41 lbs. to the basket, making 9,389 lbs., or 134 bushels; 70 lbs. of the ears were shelled and sent to the mill, which made 36 lbs of shelled corn.

COST OF THE CROP.

			Dr.	
To 1½ days hauling manure,	$1 25	$1 88		
1½ " plowing,	1 25	1 88		
4 " plowing and hoeing,	1 00	4 00		
8 " husking,	75	6 00		
Total,				$13 76
			Cr.	
By 134 bushels of Corn, at 37½ cts. per bushel,		$50 25		
Fodder,		8 00		
				$53 25
Amount of profits,				$39 49

(Signed,) MORE SPEARS.

STATEMENT OF ELI STILSON.

The soil is a black loam and was manured with 16 loads of manure to the acre; the previous crop on the land was wheat; the ground was plowed in the spring and planted in rows three feet four inches, north and south, by three feet eight inches,

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east and west, and cultivated with a cultivator and hoed twice. The kind of corn raised is the Dutton, a portion of the product of the same field being exhibited at the State Fair, and drew the premium for "Dutton Seed Corn." The product of the one acre was 181 bushels of ears of corn by measure, or 90½ bushels of corn. A portion of said crop has sinee been sold by weight, and found to overrun largely in weight.

EXPENSE OF CULTIVATION.

Drawing manure, 1½ days,	$2 00
Plowing,	1 25
Marking	25
Planting	1 00
Seed, ¼ bushel,	25
Cultivating and hoeing,	3 00
Cutting up,	1 00
Husking,	5 00
Total,	$13 75
Deduct value of cornstalks, equal to one ton of wild hay,	5 00
Cost of corn,	$8 75

Product 90½ bushels, costing about 10 cts. per bushel, exclusive of interest on land or value of manure.

(Signed,) ELI STILSON.

CARROTS—STATEMENT OF ELI STILSON.

The variety of soil on which the carrots were raised is a black loam, with a small amount of sand. The subsoil is clay. Mode of culture: The land was manured at the rate of about 16 two-horse loads of rotton manure to the acre, and plowed twice very deep and left in beds one rod wide. The land was then raked with an iron tooth rake to make it of very fine tilth, and sown with a hand drill in rows fourteen inches apart; time of sowing about the 15th of May. Hoed twice in summer, and harvested about the 10th of November. The product of the one-fourth of an acre was 421 bushels.

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EXPENSE OF CULTIVATION.

Drawing manure,	$ 75
Plowing twice,	75
Seed, ¾ lb.,	75
Raking, 1 day,	1 00
Sowing, ½ day,	25
Hoeing twice, 4 days,	4 00
Harvesting,	5 00
Product,	$12 50

Product 421 bushels, costing about three cents per bushel. The same ground produced the premium crop of 1857 at the rate of 1,284 bushels per acre, and in 1858 the product was 1,432 bushels per acre, but not reported to the State Society. In 1859, the season being very dry, the crop was only 1,184 bushels per acre, but drew the premium, and in 1860 it is 1,684 bushels per acre.

(Signed,) ELI STILSON.

DOMESTIC ANIMALS.

HORSES.

THOROUGH-BREDS AND ROADSTERS.

The Committee appointed to examine Thorough-bred horses and Roadsters, have made the following awards:

THOROUGH-BREDS.

Simon Ruble, Beloit, 1st premium stallion, "Princeton," 4 years old,	$30
J. C. Redfield, Neenah, 2d do. stallion, "King of Cymry," over 4 years,	20
J. V. Robbins, Madison, 1st do. stallion, "Glencoe," under 3 years,	15
Simon Ruble, Beloit, 1st do. mare, "Victory," over 4 years old,	25
Peter Parkinson, Jr., Georgetown, 1st do. filly, 3 years old,	15

ROADSTERS.

D. R. Brewer, Mukwanago, 1st premium stallion, "David Hill," over 4 years,	$20
J. M. Learned, Janesville, 2d do. stallion, "Red Rover," over 4 years,	15

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J. E. Munger, Oshkosh, 1st do. stallion, "Winnebago," under 3 years,... 10
H. P. Fales, La Prairie, 2d do. stallion, "Badger Star," under 3 years,... 10
J. V. Robbins, Madison, 1st do. mare, "Roan," over 4 years,..... 20
J. M. Learned, Janesville, 2d do. mare, "Kitty," over 4 years, ... 15

A very fine bright bay horse, named "Ned Forrest" was shown in this city by Mr. Ferguson; but without positive proof of pedigree; and the Committee not deeming him thoroughbred, withhold the second premium, but would recommend a discretionary premium as being a very fine well bred colt.

C. L. MARTIN,
A. H. CRONKHITE.
N. B. VAN SLYKE.

PEDIGREE OF PRINCETON.

Chestnut Sorrel; Foaled 1822, the property of John M. Clay, of Lexington, Kentucky; got by Imported Yorkshire; he by St. Nicholas.

1st dam Magnolia by imported Glencoe, he by Sultan.—2d dam, Myrtle, by Mameluke (winner of the Derby in 1827.) 3d dam, Bobadilea, winner of the Golden Cup at Ascot, and the Drawing Room Stake at Goodwood, in 1828, by Bobadil. 4th dam, Pythoness, by Sorcerer. 5th dam, Princess, by Sir Peter. 6th dam by Dungannon. 7th Dam by Turf. 8th dam by Herod. 9th dam by Golden Grove. 10th Dam Spinster, by Partner. 11th dam sister to Squirrel's dam by Bloody Buttocks. 12th dam by Greyhound. 13th Dam by Matchless. 14th dam by Brimmer. 15th dam by Pladd's White Turk. 16th dam by Dodsworth. 17th dam Layton's Barb Mare.

Myrtle, the dam of Magnolia, was imported in 1736, by Hugh and John Kirkman, of Nashville, Tennessee. Mameluke, sire of Myrtle, besides winning the Derby in 1827, ran second to Glanartney in the St. Ledger of the same year, which Glenartney won, both horses belonging to and running in the name of Lord Jersey.—*See. American Turf Register, Vol.* 11, *page* 95.

For the history and pedigree of "King of Cymry," see vol. IV. of Transactions Wisconsin State Agricultural Society.

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HORSES FOR GENERAL PURPOSES, DRAFT HORSES AND MULES.

The duties of your Committee on these classes have been arduous, but they have discharged them to the best of their ability, and submit the following awards:

HORSES FOR GENERAL PURPOSES.

H. C. Crandall, 1st premium stallion, "Green Mountain Morgan," over 3 years,	$20
S. K. Ellsworth, Oregon, 2d do. stallion, "Black Arrow," over 4 years,	15
J. Goodwin, Middleton, 1st do. stallion, "Bay Star," under 3 years,	10
C. M. Rice, Madison, 2d do. stallion, "Plato," under 3 years,	7
Daniel Vernon, Middleton, 1st do. stallion, "Morgan," 2 years,	7
J. M. Bradley, Waterloo, 2d do stallion colt, 2 years,	5
Chas Frazer, East Troy, 1st do. stallion colt, 1 year,	5
Richard Richards, Racine, 2d do. stallion colt, "Rattler," 1 year,	3
J. M. Learned. Janesville, 1st do. sucking colt,	3
J. V. Cairns, Madison, 2d do. sucking stallion colt,	2
Peter Parkinson, Fayette, 1st do. brood mare, over 4 years,	15
R. Merriam, Richland City, 2d do. brood mare, over 4 years,	10
E. W. Palmer, Fitchburg, 1st do. brood mare, 3 years,	10
R. Wilson, Dekora, 2d do. brood mare, 3 years,	7
Peter Parkison, Fayette, 1st do. brood mare, 2 years,	7
Robt. Wilson, Dekora, 2d do. brood mare, 2 years,	3
P. M. Pritchard, Fitchburg, 1st do. brood mare, "Lizzie," 1 year old	5
F. A. Bevans, Platteville, 2d do. brood mare, "Flora Temple," 1 year old,	3
Peter Parkison, Fayette, 1st do. sucking mare colt,	3
A. Stillwell, Middleton, 2d do. sucking mare colt,	2

DRAFT HORSES.

D. Burdett, Lodi, 1st premium stallion, 4 years old,	15
E. Hinkson, Dekora, 2d do. stallion, 4 years old,	10
Jas. Borah, Lancaster, 1st do. stallion, 2 years old,	7
R. Merriam, Richland City, 1st do. sucking stallion colt,	3
P. M. Pritchard, Fitchburg, 1st do. brood mare, over 4 years old,	10
R. Merriam, Richland City, 2d do. brood mare, over 4 years old,	7
J. M. Learned, Janesville, 1st do. brood mare, 2 years old,	5
John S. Adams, Fitchburg. 1st do. gelding, 4 years old.	10

JACKS AND MULES.

S. B. Newcomb, Whitewater, 1st premium jack,	$10
J. V. Robbins, Madison, 1st do. working mules,	10
P. M. Pritchard, Fitchburg, 2d do. working mules,	5
J. V. Robbins, Madison, 1st do. single mule,	5

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Mr. Robbins showed one of a pair of mules, to which the Committee awarded the first premium. It was a worthy animal, and we know of no regulation of the Society conflicting with such award.

Mr. Goodwin, of Fox Lake, exhibited a span of 2 years old mules worthy of a premium; but as there was no premium offered to cover his case, the Committee could make no award.

S. BROOKS, *Chairman.*

MATCHED AND SADDLE HORSES.

Your Committee acting in classes, 6 and 7 would report the following awards:

MATCHED HORSES AND MARES.

A. Hyatt Smith, Janesville, 1st premium carriage horses,	$15
J. M. Bradley, Waterloo, 1st do. roadsters,	15
A. H. Taggart, Delavan, 1st do. draft horses,	15

FOR LIGHT HARNESS AND SADDLE.

B. F. Hopkins, Madison, 1st premium light harness horse,	$10
N. B. Van Slyke, Madison, 2d do. light harness horse,	5
J. V. Robbins, Madison, 1st do. saddle horse,	10
John D. Welch, Madison, 2d do. saddle horse,	5

We beg leave further to remark that in our opinion the pair of roadsters entered by J. M. Seaman, of Janesville, are every way worthy of consideration, and we would recommend a suitable premium therefor.

A pair of draft horses exhibited by Mr. Chandler, of Madison, in consequence of a misunderstanding as to the time of exhibition, were not seen by the Committee until the morning after the premiums were awarded, otherwise they are of the unanimous opinion that they would have received the first premium in the lieu of which, we recommend that a life membership be gratuitously conferred upon him.

Respectfully submitted,

W. B. SLAUGHTER,
J. E. MUNGER,
G. W. LATHROP. } *Committee.*

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TROTTING HORSES.

The Committee on horses of this class reported simply the awards, which are as follows:

STALLIONS OVER 4 YEARS.

D. R. Brewer, Mukwonago, 1st premium, "David Hill," time 2:48½,..... $30
J. M. Learned, Janesville, 2d do. "Membrino Rattler," time 2:50¼,..... 20
E. Grover, Jr., Madison, 3d do. "Green Mountain Boy," time 2:52,..... 10

MARES AND GELDINGS OVER 4 YEARS OLD.

G. Dutcher, Madison, 1st premium, gelding "Dick Turpin," time 2:51¼, $30

MARES AND GELDINGS OVER 3 AND UNDER 4 YEARS.

Nelson Grafton, Burke, 1st premium, mare "Flora," time 3:55¼..... $30

MATCHED HORSES OVER 4 YEARS.

G. Dutcher, Madison, 1st premium, "Dick & Harry," time 3:10¼,..... $30
J. M. Learned, Janesville, 2d do. "Grays," time 3:32½,..... 20

E. B. Wolcott, *Chairman.*

CATTLE.

SHORT HORNS.

The Committee upon whom devolved an examination of the animals in this class, submit the following:

DURHAM CATTLE.

S. Brooks, East Troy, 1st premium on bull "Sampson," over 3 years old, $20
C. H. Williams, Excelsior, Sauk Co., 2d do. bull "Paris," over 6 years, 15
A. H. Cronkhite, Neenah, 3d do. bull "Governor," over 3 years,..... 10
John Hall, Madison, 1st do. bull "George," 2 years,..... 15
Theron Loomis, Raymond, Racine Co., 2d do. bull "Destiny,"..... 10
S. Nye, Madison, 3d do. bull, 2 years,..... 5
A. G. Knight, Racine, 1st do. bull "Hiawatha," 1 year,..... 10
W. D. Williams, Whitewater, 2d do. bull, 1 year,..... 5
S. Brooks, Troy, 3d do. "Young Sampson,"..... 5
Richard Richards, Racine, 1st do. cow "Red Rose," over 3 years,..... 20

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John P. Roe, Union Church, Racine Co., 2d do. cow "Silver," over 3 yrs,	15
Richard Richards, Racine, 3d do. cow, over 3 years,.....	10
Richard Richards, Racine, 1st do. heifer "Camilla," 2 years,.....	15
Theron Loomis, Raymond, 2d do. heifer "Royala," 2 years old,.....	10
C. H. Williams, Excelsior, 3d do., heifer "Ruby," 2 years,.....	8
John P. Roe, Union Church, 1st do., heifer "Sunshine," 1 year,.....	10
John P. Roe, Union Church, 2d do., heifer "Blencore,".....	7
Thos. Reynolds, Madison, 3d do., heifer "Miss Julia,".....	5
John P. Roe, Union Church, 1st do., heifer calf "Dawn,".....	7
B. F. Hopkins, Madison, 2d do., heifer calf,.....	5
Richard Richards, Racine, 1st do., bull calf "Earl,".....	7
John P. Roe, Union Church, 2d do., bull calf,.....	5

In class 9, several 3 year old bulls, exhibited by Messrs. Blanchard of Dane County, Kitchum of Sauk, Douglass of Rock, and Seymour of Dane, were fine animals and deserving of honorable mention in this connection. The Committee only regret that they are not able to award them all, premiums. Of the yearling bulls we would further remark that Messrs. Seymour and Blanchard, and C. H. Williams of Sauk, presented animals worthy of mention, and seem to pride themselves in having good stock. Among the three year old cows deserving of notice, the Committee would mention those exhibited by Messrs. Williams of Sauk, Roe of Racine, and Reynolds of Madison, of which the Committee feel bound to speak, in justice to the quality of the stock. In several instances your Committee found great difficulty in determining which was entitled to the prize, and called to their assistance two members whose judgment and experience fitted them to act in conjunction with us, that our united efforts might result in more nearly correct decisions.

All of which is respectfully submitted,

I. N. De Forrest,
Richard Richards,
Simon Ruble,
Miles K. Young,
P. M. Perkins.
} *Committee.*

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The following pedigrees of premium animals in this class, are true copies of the original papers now on file in this office :

PEDIGREE OF BULL "GEORGE."

This is to certify that the white Durham Bull, now owned by John Hall and on exhibition at the State Fair in Madison, is from a thorough-bred cow called "Snow Ball"; bred by James Wadsworth of New York, and from an imported Durham Bull, now or lately owned by Mr. Wadsworth. Mr. Hall's Bull was calved on the fifteenth day of July, 1858, and kept by me until he was seven months old. I know him to be pure blood, and that his dam is the best breeder that I have ever known, and also a superior cow for milk. She was calved on Mr. Wadsworth's farm in the State of New York, on the 14th day of May, 1855.

ANDREW PROUDFIT.

Madison, Sept. 24, 1860.

PEDIGREE OF BULL "DESTINY."

Red—bred by John P. Roe, Union Church, the property of Revd. Theron Loomis, Raymond, Racine Co., Wis., Calved June 26th, 1858, got by imp. Rothersthorpe 928 (13631) out of imp. Diana, by Dictator (11356)—by Launcelot (6122)—by Nelson (4547)—by Eclipse (3684)—by Barrister (1684).

(Signed,) THERON LOOMIS.

PEDIGREE OF BULL "HIAWATHA."

Red—bred and owned by A. G. Knight, Racine, Wis.—calved July, 1859—got by Prince Albert 3d (858)—out of Cora by Fremont (516)—Beauty by President (832)—Flora by Rantipole (885)—Arabella 2nd by imp. Rover (5015)—imp. Arabella by Victory (5565), son of Waterloo (2816)—Sally by Major (2252), son of Minor (441)—Old Sally by grandson of Favorite (252)—by Punch (531)—by Hubback (319).

(Signed,) A. G. KNIGHT.

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PEDIGREE OF COW "RED ROSE."

Red—bred by J. P. Reynolds, Jr., Winnebago Co., Ills.—the property of Richard Richards, Racine, Wis.—calved May, 1853—got by Fremont (516)—out of Favorite by Prince Albert 3rd (858)—Arabella 3d by imported Prince Charles (2461)—imp. Arabella by Victory (5565)—Sally by Major (2252), son of Minor (441)—Old Sally by grandson of Favorite (252)—by Punch (531)—by Hubback (319).

See this Pedigree on page 620 of the 3rd vol. of Am. Herd Book.

(Signed,) R. RICHARDS.

PEDIGREE OF HEIFER "CAMILLA 2ND."

Red and white—bred by Ed. Bebb, Fountaindale, Winnebago Co., Ills.—owned by Richard Richards, Racine, Wis.,—calved Oct. 7th, 1859—got by Prince Albert 3rd (858)—out of Camilla by Sterling (1004)—Calm by Farmer (493)—Josephine by imp. Prince Charles (2461)—Virginia by Powhatan (828½)—Lady of the Lake by imp. Reformer (2505)—Rose of Sharon by Belvidere (1706)—Red Rose 5th by 2nd Hubback (432(—)Red Rose 2nd by his Grace (311)—Red Rose 1st by. Yarborough (705)—the American cow by Favorite (252)—by Punch (53)—by Foljambe (263)—by Hubback (319)—by Jas. Bumsted's bull (97).

See the above Pedigree in the 4th vol. of Am. Herd Book, page 286.

(Signed,) RICHARD RICHARDS.

PEDIGREE OF "NAPOLEON."

Red—bred by Richard Richards, Racine, Wis.—calved Mar. 6th, 1860—got by Fremont (516)—out of Red Rose by Fremont (516)—Favorite by Prince Albert 3rd (858)—Arabella 3rd by imported Prince Charles (2461)—imported Arabella by Victory (556)—a son of Waterloo (2818)—Sally by Major (2252), son of Minor (441)—Old Sally by grandson of Favorite (252)—by Punch (531)—by Hubback (319).

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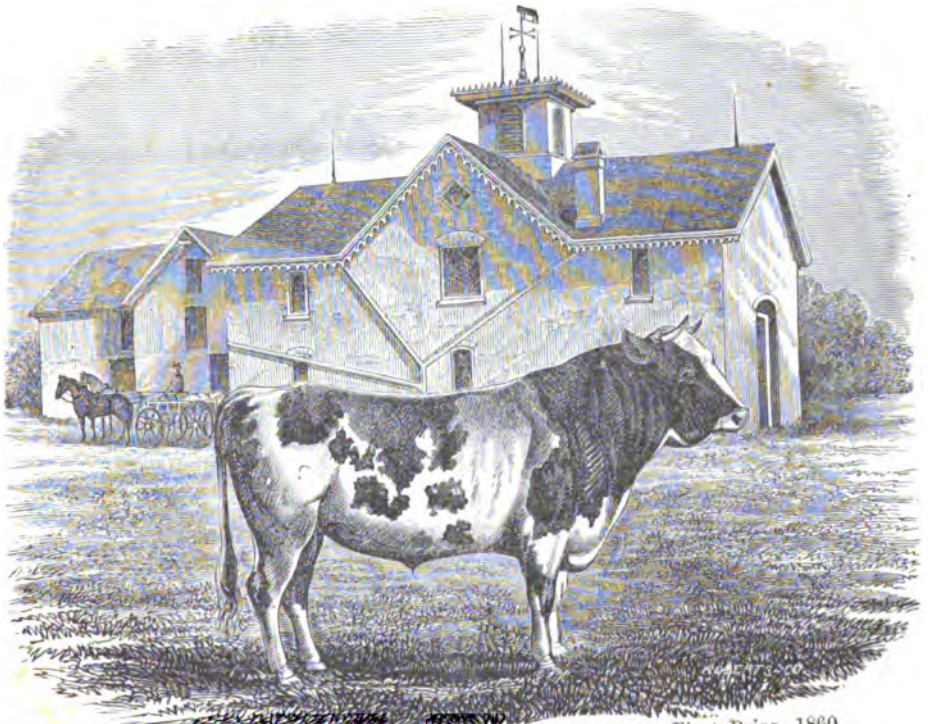

MAJOR.—Alderney—Bred and owned by J. V. Robbins. First Prize, 1860.

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Calf Napoleon was calved since the last vol. of Am. Herd Book was issued—weight 740 lbs.

(Signed,) RICHARD RICHARDS.

DEVONS, ALDERNEYS, AYRESHIRES AND HEREFORDS.

The Committee on these important classes express their high gratification at the superior quality of the animals on exhibition, and regret that the time allotted them would not allow of a further report than the mere awards. We, also, regret the lack of time on the part of this Committee as it has deprived us of the names of those who served the Society in that capacity; the several members having failed to put themselves upon the record.

DEVONS.

Geo. Baker, Hustisford, 1st premium, bull "Prince," over 3 years,.....	$20
J. M. Learned, Janesville, 2d do., bull "Saratoga Boy," over 3 years,.....	15
Geo. Baker, Hustisford, 3d do., bull "Duke," over 3 years,.....	10
Gustavus Goodrich, Whitesville, bull over 3 years,.....	Dip.
A. H. Taggart, Delavan, North Devon bull, "Tartar Chief,".....	Dip.
Isaac S. Newton, Middleton, 1st do., bull "Beauty," 2 years,.....	15
Luther Rawson, Oak Creek, 2d do., bull "Nicholas," 2 years,.....	10
J. M. Learned, Janesville, 3d do., bull "Prince," 2 years,.....	8
J. M. Learned, Janesville, 1st do., bull "Princeton," 1 year,.....	10
Thos. Reynolds, Madison, 2d do., bull "Honest Abe," 1 year,.....	7
A. Richmond, Whitewater, 1st do., bull calf,.....	7
J. Brackett, Whitewater, 2d do., bull calf,.....	5
J. M. Learned, Janesville, 1st do., cow "Lonesome," 4 years old, ...	20
J. M. Learned, Janesville, 2d do., cow "Lady Gay," 4 years old,.....	15
Geo. Baker, Hustisford, 3d do., cow "Beauty," over 3 years old,.....	10
Isaac S. Newton, Middleton, 1st do., heifer "Princess," 2 years, ...	15
Geo. Baker, Hustisford, 2d do., heifer "Rose," 2 years,.....	10
N. Leavenworth, Janesville, 3d do., heifer, 2 years,.....	8
Luther Rawson, Oak Creek, 1st do., heifer "Bess," 1 year,.....	10
J. M. Learned, Janesville, 2d do., heifer "Lonesome," 1 year,.....	7
Thos. Reynolds, Madison, 3d do., heifer "Kate Hayes," 1 year old,.....	5
A. Richmond, Whitewater, 1st do., heifer calf "Golden Drop,.....	7
Isaac S. Newton, Middleton, 2d do., heifer calf "Lilly,".....	5

ALDERNEYS.

J. V. Robbins, Madison, 1st premium, bull "Major," 3 years,.....	$20
J. V. Robbins, 1st do., bull "Prince of Wales," 2 years,.....	15

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J. V. Robbins, 1st do., cow "Dewlap," 3 years,..... 20
J. V. Robbins, 2d do., cow "Buttercup," 3 years,..... 15
J. V. Robbins, 3d do., cow "Cora," 3 years,..... 10
J. V. Robbins, 1st do., heifer "Rose Bud," 2 years, ... 15
J. V. Robbins, 2d do., heifer "Minnie," 2 years,..... 10
J. V. Robbins, 1st do. heifer calf "Pet,"..... 7
J. V. Robbins, 1st do., bull calf "Zouave,"..... 7
J. V. Robbins, 2d do., bull calf "Tommy,"..... 5

AYRESHIRES.

J. M. Learned, Janesville, 1st premium, bull "Macbeth," 1 year,..... $10
J. M. Learned, Janesville, 1st do., heifer "Nina," 2 years,..... 15

HEREFORDS.

N. D. Fratt, Racine, 1st premium, bull, 1 year,..... $10
N. D. Fratt, Racine, 1st do., cow, 3 years,..... 20
N. D. Fratt, Racine, 2d do., cow, 3 years,..... 15

It will be seen that the number of premiums awarded in these classes is larger than at any previous Fair—a significant fact, and one full of encouragement to all who are interested in the improvement of our stock of cattle.

PEDIGREE OF BULL CALF "PRINCE."

Owned by J. Brackett, Whitesville, Racine Co., Wisconsin.

Sire "Major 2nd," g. s. "Major." Major was bred by J. C. Gaffer, of Thomhill, Canada West. Sire, "Billy,"—dam, "Beauty," both imported by Mr. Gaffer.

On the dam's side, he is from a full blood cow, purchased by R. H. Van Rensellaer, Butternut, Otsego Co., N. Y. She is of the stock imported by Geo. Patterson, of Baltimore.

(Signed,) JERIHU BRACKETT.

PEDIGREE OF BULL "NICHOLAS."

Nicholas was calved in March, 1858, sired by "Nero," he by Baltimore 2nd, he by "Herod" (214). (See Herd Book.) "Nero's" dam was sired by Baltimore 1st, he by Eclipse, (191). Herd Book.

The dam of "Nicholas," "Cora," is a thorough-bred cow, also descended from "Herod," (214,) and together with the

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others, procured from the celebrated herd of Mr. Geo. Patterson, of Baltimore, Md.

(Signed) LUTHER RANSON.

GRADE CATTLE, WORKING OXEN AND FAT CATTLE.

GRADE CATTLE AND WORKING OXEN.

J. C. Hopkins, Madison, 1st premium, grade cow over 3 years,	$10
Isaac S. Newton, Middleton, 2d do., grade cow over 3 years,	7
Andrew Howie, Westport, 3d do., grade cow over 3 years,	5
Isaac S. Newton, Middleton, 1st do., heifer, 2 years,	5
Leroy B. Wheeler, Verona, 2d do., heifer, 2 years,	3
J. V. Robbins, 1st do., heifer, (Jersey cross,) 1 year,	5
J. M. Learned, Janesville, 1st do., heifer calf,	3
David Richardson, Verona, 2d do., heifer calf,	2
W. Murphy, Baraboo, 1st do., working oxen,	10
Jos. A. Mann, Rockside, 1st do., 1 year,	3

FAT CATTLE.

John Wisen, Roxbury, 1st premium, fat oxen, over 5 years,	$10
Daniel Palmer, Fitchburg, 2d do., fat oxen, over 5 years,	7

The foregoing awards are respectfully submitted by the the Committee.

E. PIER, *Ch'n.*

SHEEP.

SPANISH MERINOES.

H. Hemmenway, Whitewater, 1st premium, buck, over 2 years,	$10
A. F. Knox, Whitewater, 2d do., buck, over 2 years,	7
B. B. Freeman, Whitewater, 2d do., buck, over 2 years,	5
A. F. Knox, Whitewater, 1st do., buck over 1 year,	7
Asaph Pratt, Lima Centre, 2d do., buck over 1 year,	5
A. S. Edgerton, Whitewater, 3d do., buck over 1 year,	3
J. M. Clark, Whitewater, 1st do., pen ewe lambs,	5
Asaph Pratt, Lima Centre, 2d do., pen ewe lambs,	3
H. Hemmenway, Whitewater, 3d do., pen ewe lambs,	2
J. M. Clark, Whitewater, 1st do., pen ewes, over 2 years,	10
A. F. Knox, Whitewater, 2d do., pen ewes, over 2 years,	7
A. S. Edgerton, Whitewater, 3d do., pen ewes, over 1 year,	5

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J. M. Clark, Whitewater, 1st do., pen ewes, over 1 year,..... 7
Gustavus Goodrich, Whitesville, 2d do., pen ewes, over 1 year,..... 5
A. S. Edgerton, Whitewater, 3d do., pen ewes, over 1 year,..... 3
Asaph Pratt, Lima Centre, 1st do., pen ewe lambs,..... 5
J. M. Clark, Whitewater, 2d do., pen ewe lambs,..... 3
A. S. Edgerton, Whitewater, 3d do., pen ewe lambs,..... 2

FRENCH MERINO SHEEP.

R. B. Ransom, Fitchburg, 1st premium buck, over 3 years, ... $10
W. E. Sanford, Waukesha, 2d do., buck over 2 years,..... 7
W. E. Sanford, Waukesha, 3d do., buck over 2 years,..... 5
W. E. Sanford, Waukesha, 1st do., buck over 1 year,..... 7
R. B. Ransom, Fitchburg, 2d do., buck over 1 year,..... 5
P. B. Stewart, Eagle, 1st do., ewes over 2 years,..... 10
W. E. Sanford, Waukesha, 2 do., ewes over 2 years,..... 7
Luther Landon, Waupun, 3d do., ewes over 2 years, ... 5
P. B. Stewart, Eagle, 1st do., ewes over 1 year,..... 7
P. B. Stewart, Eagle, 2d do., ewes over 1 year,..... 5
W. E. Sanford, Waukesha, 3d do., ewes over 1 year, ... 3
P. B. Stewart, Eagle, 1st do., pen ewe lambs,..... 5
R. B. Ransom, Fitchburg, 2d do., pen ewe lambs,..... 3

LEICESTER SHEEP.

Luther Rawson, Oak Creek, 1st premium, buck over 2 years,..... $10
Philip Rawson, Verona, 2d do., buck over 2 years,..... 7
R. Bagg, Eagle, 3d do., buck over 2 years,..... 5
Philip Waldron, Verona, 1st do., buck lamb,..... 5
R. Bagg, Eagle, 1st do., pen ewes over 2 years,..... 10
R. Bagg, Eagle, 2d do., pen ewes over 2 years,..... 7
R. Bagg, Eagle, 1st do., pen ewes over 1 year,..... 7
R. Bagg, Eagle, 2d do., pen ewes over 1 year, ... 5

SOUTH DOWN SHEEP.

W. S. Murray, Neenah, 1st premium, buck over 2 years, ... $10
S. Charlesworth, Omro, 2d do., buck over 2 years,..... 7
Matthew Tower, Omro, 3d do., buck oeer 2 years,..... 5
Matthew Tower, Omro, 1st do., buck over 1 year,..... 7
John P. Roe, Union Church, 2d do., buck, 1 year,..... 5
R. Bagg, Eagle, 3d do., buck, 1 year,..... 3
Luther Rawson, Oak Creek, 1st do., buck lambs,..... 5
Matthew Tower, Omro, 2d do., buck lambs,..... 3
John P. Roe, Union Church, 1st do., ewes over 2 years,..... 10
Matthew Tower, Omro, 2d do., ewes over 2 years,..... 7
S. Charlesworth, Omro, 3d do., ewes over 2 years,..... 5
M. Tower, Omro, 1st do., ewes, 1 year,..... 7

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Your Committee find that South Downs and Leicesters came into competition, and supposing it to be a mistake in making up the Premium List, have awarded premiums to both South Downs and Leicesters.

In this Class J. P. Roe exhibited the best Buck Lambs, but having only two, was excluded from competition.

GEO. C. PRATT,
ALMON ATWOOD,
G. H. STEWART, } *Committee.*

SWINE AND POULTRY.

The Committee on small breeds of Swine, Suffolks and others, have awarded the following premiums:

SWINE.

J. V. Robbins, Madison, 1st premium Suffolk boar, over 2 yrs	$10
H. P. Hall, Madison, 2d do. Suffolk boar, over 2 yrs	7
M. Tower, Omro, 3d do. Suffolk boar, over 2 yrs	5
O. P. Dow, Palmyra, 1st premium, Essex boar, over 2 yrs	10
J. V. Robbins, Madison, 1st premium Suffolk boar, over 1 year	7
J. V. Robbins, Madison, 2d do. Suffolk boar over 1 yr	5
H. P. Hall, Madison, 3d do. Suffolk boar, 1 yr	3
Samuel Charlesworth, Omro, 1st premium, Suffolk sow, over 2 yrs	10
J. V. Robbins, 1st premium, breeding Suffolk sow with 6 pigs under 3 mos	10
H. P. Hall, Madison, 2d premium, Suffolk sow and pigs	5
J. V. Robbins, 1st premium, Sheffield sow and pigs	10
J. V. Robbins, 1st premium, Sheffield boar pig, 6 mos	5
J. V. Robbins, 1st premium, Suffolk boar pig, 6 mos	5
J. C. Hopkins, Madison, 2d premium, Suffolk boar pig, 6 mos	3
O. P. Dow, Palmyra, 1st premium, Essex boar pig, 6 mos	5
J. V. Robbins, 1st premium, Sheffield sow pig, 6 mos	5
J. V. Robbins, 1st premium, Suffolk sow pig, 6 mos	5
J. V. Robbins, 2d premium, Suffolk sow pig, 6 mos	7
J. V. Robbins, 1st premium Sheffield boar, 1 yr	3
O. P. Dow, 1st premium, Essex boar, over 6 mos	5

J. Y. CALDWELL,
J. SCRIBNER, Jr.,
J. F. JONES, } *Committee.*

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POULTRY.

I. S. Newton, Middleton, best lot spangled Hamburg	$3
Jas. Parkins, Westport, best lot Poland fowls	2
Chas. Oswin, Middleton, best lot game fowls	2
N. W. Hawes, Verona, best Dorking fowls	2
J. C. Redfield, Neenah, best Cochin Chinas	2
M. Manling, Janesville, best and greatest variety	5
Alex. Stillwell, Middleton, best pair guinea fowls	2
S. Hook, Oregon, best pair pea fowls	2
G. W. Lathrop, Algoma, best pair geese	2
G. W. Lathrop, Algoma, best pair ducks	2

The Committee regret to observe so little competition in this class; but would remark, that, as far as represented, the fowls were very fine.

WM. WASHBURNE, SAM'L. A. CHASE, } *Committee.*

PRODUCTS OF THE SOIL.

FIELD PRODUCTS.

S. R. Gunn, Pierce County, 1st premium winter wheat	$3
H. P. Hall, Madison, 2d premium winter wheat	2
Matthew Towers, Omro, 1st premium Rio Grande	3
E. Wilcox, Northfield, Jackson County, 2d premium Rio Grande	2
S. R. Gunn, Pierce County, 1st premium Canada club	3
Eli Stilson, Oshkosh, 2d premium Canada club	2
S. R. Gunn, 1st premium Lowland Scotch wheat	3
S. R. Gunn, 1st premium blue joint club	3
S. R. Gunn, 1st premium rye	3
E. Wilcox, Northfield, 2d premium rye	2
C. Chipman, Springfield, 1st premium Poland oats	2
John Rutherford, Verona, 2d premium Poland oats	Trans.
E. Wilcox, Northfield, 1st premium white oats	2
L. Landon, Waupun, 1st premium German oats	2
S. R. Gunn, 1st premium black oats	2
S. R. Gunn, 1st premium barley	2
John Rutherford, Verona, 2d premium barley	Trans.
S. R. Gunn, 1st premium buckwheat	2
A. J. Niles, Madison, 2d premium buckwheat	Trans.
F. C. Curtis, Rocky Run, 1st premium timothy seed	3

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John Rutherford, Verona, 2d premium timothy seed..... 2
L. Landon, Waupun, 1st premium black-eyed marrowfat peas..... 2
C. Chipman, Springfield, 2d premium black-eyed marrowfat peas.....Trans.
S. R. Gunn, 1st premium 1000-to-1 beans..... 2
R. S. Carter, 2d premium navy beans.....Trans.
H. P. Hall, Madison, 1st premium seed corn..... 3
Eli Stilson, Oshkosh, 2d premium Dutton seed corn..... 2
Jno. Rutherford, Verona, 1st premium Carter potatoes..... 2
W. B. Knapp, Burke, 2d premium Carter potatoes.....Trans.
Frank Smith, Madison, 1st premium Mercer potatoes..... 2
G. Rice, Oregon, 2d premium Mercer potatoes.....Trans.
John Hall, Madison, 1st premium pink-eye potatoes..... 2
J. J. Patten, Vienna, 1st premium on early potatoes, "Mountain June," 2
Alex. Stillwell, Middleton, 1st premium for best show, 19 varieties..... 5
S. R. Gunn, 2d premium for best show, 11 varieties..... 3
T. K. Carr, Oak Creek, 1st premium carrots..... 2
John Hall, Madison, 2d premium carrots.....Trans.
W. H. Young, Glen Haven, 1st premium "Russian" turnips..... 2
S. R. Gunn, 2d premium "Russian" turnips.....Trans.
Albert Bovee, Eagle, 1st premium pumpkins..... 2
E. Grover, Madison, 2d premium pumpkins.....Trans.
J. Terwilliger, Madison, 1st premium dent corn..... 3
Chas. Chipman, Springfield, 2d premium dent corn..... 2

On looking over the list of premiums offered in this class, the Committee find no provision made for the different varieties of Spring wheat, very superior samples of which were on exhibition. To encourage the culture of different kinds of Spring wheat, with a view of testing their relative importance in point of yield, market value and flouring qualities, the Committee have taken the liberty to overstep the named limits of the Premium List, and recommend premiums on samples of "Canada Club," "Lowland Scotch Fyfe," and "Blue Joint Club," (a new and apparently excellent variety,) which were entered in this class and came under our observation. A similar deficiency in the Premium List in regard to oats and corn was treated in the same manner, since the Committee believed the different samples on exhibition to be worthy of substantial notice.

These suggestions may not be unworthy of consideration in

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the formation of Premium Lists for the future agricultural exhibitions of the Society.

Respectfully submitted,

L. P. HARVEY,
JOHN BUDD,
R. G. BELL, } *Committee.*

GARDEN VEGETABLES.

John Hall, Madison, best celery	$2
S. R. Gunn, Prescott, best beets	Trans.
J. E. Carpenter, Windsor, 2d do. beets	50c
Jno. Rutherford, Verona, best parsneps	Trans.
Jno. Hall, Madison, 3d do. parsneps	50c
H. P. Hall, Madison, best onions	2
Jno Rutherford, Verona, 2d do. onions	Trans.
Jno Hall, best cabbage	Trans.
S. R. Gunn, 2d do. cabbage	50c
Jno. Hall, best tomatoes	Trans.
S. R. Gunn, 2d do. tomatoes	50c
H. A. Tenney, best egg plant	Trans.
Alex. Stillwell, Middleton, 2d do. egg plant	50c
H. J. Starin, Whitewater, best bushel sweet potatoes	1 bbl. Tenbrook's s.p.
A. Bovee, Eagle, 2d do. sweet potatoes	⅔ do
S. B. Higgins, Palmyra, 3d do. sweet potatoes	⅓ do
H. A. Tenney, Madison, best dozen sweet potatoes	3
S. B. Higgins, 2d do. doz. sweet potatoes	2
Jno. Hall, best Lima beans	Trans.
C. E. Morgan, 2d do. Lima beans	50c
Jno. Hall, best winter radishes	Trans.
Jno. Hall, greatest variety garden products	5
H. P. Hall, 2d do. variety garden products	3
H. P. Hall, best lot squashes	2
H. Snell, 2d do. lot squashes	1
H. G. Williams, West Point, largest squash	Trans.

Mr. H. J. Starin being a competitor for the premiums offered by J. W. Tenbrook, on Sweet Potatoes, the remainder of the Committee, at his request, examined the articles presented, and report awards as above.

GEO. CAPRON,
RICHARD ARUNDEL, } *Committee.*

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FRUITS AND FLOWERS.

FRUITS BY NON-PROFESSIONAL CULTIVATORS.

H. J. Starin, Whitewater, best and greatest variety apples, 1st premium, $7
V. C. Mason, Aurora, 2d do. and greatest variety apples, 2d do..... 5
Jacob Fowler, Bradford, 3d do. and greatest variety apples, 3d do..... 3
A. G. Tuttle, Baraboo, best 10 varieties apples..... 3
D. H. Clement, Willow Springs, 2d do. do..... 2
W. A. Pierce, Sun Prairie, 3d do. do.....Trans.
Lucius Warner, Columbus, best 5 varieties apples..... 2
Abraham Murphy, Lake View, 2d do. do.....Trans.
A. B. Smith, Lake Mills, best show autumn apples..... 7
S. Charlesworth, Omro, 2d do. do..... 5
L. Woodworth, Bristol, 3d do. do..... 3
W. M. Bartholomew, Lodi, best show winter apples..... 7
Henry Floyd, Aurora, 2d do. do..... 5
Thos. Howland, Pleasant Prairie, 3d do. do..... 3
Jas. Barr, Jefferson, best and greatest variety pears..... 7
T. Howland, Pleasant Prairie, 2d do. do..... 5
L. Woodworth, Bristol, 3d do. do..... 3
H. L. Foster, Madison, best 2 varieties pears..... 5
L. Rawson, Oak Creek, 2d do. do..... 3
M. C. Waite, Baraboo, 3d do. do..... 2
H. W. Hayes, Palmyra, best and greatest variety plums..... 3
Henry Floyd, Aurora, best variety peaches..... 5
V. C. Mason, Aurora, 2d do. do..... 3
J. T. Stevens, Madison, best and greatest variety grapes..... 3
V. C. Mason, Aurora, 2d do. do..... 2
Peter Kehl, Roxbury, 3d do. do.....Trans.
O. P. Dow, Palmyra, best ice cream water-melons..... 2
Moses Chase, Bristol, 2d do. do.....Trans.
O. P. Dow, Palmyra, best mountain sprout water-melon..... 2
O. P. Dow, Palmyra, best L. I. ice cream water-melons..... 2
S. B. Higgins, Palmyra, best black Spanish water-melons..... 2
S. B. Higgins, Palmyra, best collection water-melons..... 3
O. P. Dow, Palmyra, do. do..... 2
Geo. F. Brown, Blooming Grove, 3d best collection water-melons.....Trans.
Moses Chase, Bristol, best show citron-melons..... 2
J. F. Westcott, Farmer's Grove, 2d do. do.....Trans.

The Committee recommend that copies of the Transactions of the State Agricultural Society of this year be donated to the Columbia County Agricultural Society, to be distributed among

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the fruit growers of that county, for the splendid display of fruit from the county.

E. B. QUINER,
J. C. BRAYTON, } *Committee.*
JAS. BARR,

FRUITS BY PROFESSIONAL CULTIVATORS.

A. G. Hanford, Waukesha, 1st premium, best and greatest variety apples,	$7
J. C. Brayton, Aztalan, 2d do. do	5
George P. Peffer, Pewaukee, 3d do. do	3
B. B. Olds, Clinton, 1st premium best ten varities apples	3
John Wilcox, Omro, 2d do. do	2
B. B. Olds, 1st premium best five varieties apples	2
Plumb, Willey & Co., Madison, 1st premium show autumn apples	7
C. Mason Plumb, Lake Mills, 2d do. do	5
Plumb, Willey & Co., 1st premium show winter apples	7
C. Mason Plumb, Lake Mills, 2d do. do	5
A. G. Hanford, Waukesha, 1st premium greatest variety pears	7
Geo. P. Peffer, Pewaukee, 2d do. do	5
Geo. J. Kellogg, Janesville, 1st premium best 2 variety pears	5
Geo. P. Peffer, 1st premium greatest variety plums	3
Geo. P. Peffer, 3d premium, best show peaches	2
Atwood & Cooper, Lake Mills, 1st premium best show grapes	3
Charles Hanford, Bradford, 2d do. do	2
George J. Kellogg, Janesville, 3d do. do	Trans.
John Hall, Madison, 2d premium musk-melons	Trans.
George P. Peffer, 1st premium cultivated cranberries	3

A large collection of apples from Rock county (248 plates, and 225 varieties,) shown by G. J. Kellogg, the Committee deem worthy of high commendation, and suggest an honorary premium.

JOHN A. KENNICOTT,
JAMES OZAUNE, } *Committee.*
V. C. MASON,

[The Ex-Committee approved of the recommendation touching Mr. Kellogg's collection of apples, and have awarded him the Diploma of the Society.]

WINES.

The Committee whose duty it was to test the relative merits of the different varieties of wine on exhibition, have performed this duty, and make the following awards:

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Peter Kehl, Roxbury, 1st premium grape	$5
Charles Hanford, Bradford, 2d do	3
N. B. Van Slyke, Madison, 1st premium currant	3
H. W. Hayes, Palmyra, 2d do	2
J. R. Mudge, Belvidere, Ill., (W. F. Parish, agent,) rhubarb, the only sample worthy of premium	Trans.
M. C. Waite, Baraboo, raspberry	Trans.
Chas. Hanford, Bradford, strawberry	Trans.

Some of the articles in this class were very fine in the judgment of the Committee, and they had abundant means of testing their respective qualities.

Respectfully,

WM. GENNETT,
THOS. DAVEY,
F. E. BIRD,
H. K. LAWRENCE, } *Committee.*

FLOWERS BY NON-PROFESSIONAL CULTIVATORS.

The Committee to whom was entrusted the examination of flowers in this class, regret that the display was not larger. Flowers cannot convehiently be brought from a great distance, but the gardens, green-houses of Madison and vicinity, should have been more worthily represented. The awards of the Committee are as follows:

Miss C. E. Stevens, Madison, floral design	$5
Mrs. W. P. Towers, Madison, display cut flowers	2
Mrs. W. P. Towers, Madison, basket flowers	2
Mrs. W. P. Towers, Madison, variety asters	
George Capron, Madison, variety gladiolus	2
George Capron, Madison, variety flox	2
George Capron, Madison, variety pansies	2
George Capron, Madison, 1st premium pyramid boquet	5
Miss Stevens, 2d do. do	3
Miss Stevens, 1st premium flat boquet	3
Mrs. W. P. Towers, variety petunias	2
George Capron, 1st premium arranged boquet	2
Plumb, Willey & Co., 1st premium evergreens	5

Respectfully submitted.

JOHN BUDD, *Chairman.*

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FLOWERS BY PROFESSIONAL CULTIVATORS.

John Budd, Madison, best ornamental design	5
John Budd, Madison, best variety green house plants	8
John Budd, Madison, best geraniums	2
John Budd, Madison, best Dahlias,	3
John Budd, Madison, best fuchias	1
John Budd, Madison, best asters	1
John Budd, Madison, best cut flowers	3
John Budd, Madison, best round boquet	1
A. G. Hanford, Waukesha, best flat boquet	1
John Budd, best pansies	1
John Budd, greatest variety of flowers	Dip. & 5

It will appear by the above awards that most of the prizes were taken by Mr. Budd, of Madison. His show of plants and flowers was large and very fine, and the Green-house on the grounds afforded an excellent place for their display and safe preservation.

J. B. BRITTON,
MRS. J. B. BRITTON,
R. G. BELL,
J. F. STEVENS,
Committee.

PRODUCTS OF THE DAIRY AND HOUSEHOLD.

BUTTER, CHEESE, BREAD, CAKE AND HONEY.

J. V. Robbins, 1st premium, June butter,	$10
David Ferguson, Burke, 2d do., butter,	7
Chas. Chipman, Springfield, 3d do., butter,	5
A. N. Seymour, Mazomanie, June butter, entitled to notice,	
Daniel Ferguson, Burke, 1st premium on butter made at any time,	7
J. V. Robbins, 2d do., butter made do	5
Mrs. N. D. Fratt, Racine, 3d do., butter made do	3
J. V. Robbins, 1st do., 3 cheeses,	10
Almon Atwood, Waupun, 2d do., 3 cheeses,	7
Robert Wilson, Dekora, 3d do., 3 cheeses,	5
Eli Stilson, Oshkosh, 3 cheeses entitled to notice.	
Eli Stilson, Oshkosh, 1st premium cheese	3
Almon Atwood, Waupun, 2d do., cheese,	2

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J. V. Robbins, Mammoth cheese, (1,620 lbs.) Secretary instructed to highly commend.

S. R. Gunn, Prescott, 1st premium honey,..... 3

Herbert Reed, Madison, sample superior honey.

S. R. Gunn, best bbl. spring wheat flour, very good.

Mrs. Amelia Peffer, Pewaukee, 1st premium wheat bread, yeast raising, 3

Mrs. Lucius Warner, Columbus, 1st do. Graham bread,..... 3

Mrs. H. W. Hayes, Palmyra, 1st do. sponge cake, ... 2

Mrs. A. G. Niles, Madison, 1st do. plain cake, ... 2

Plumb, Willey & Co., Madison, cake made with Sorghum,..... 2

Mrs. H. W. Hayes, Palmyra, 1st premium corn bread,..... 3

Miss Justina Peffer, Pewaukee, best loaf wheat bread,..... 2

Miss L. Bement, Oregon, best specimen cookies,..... 2

Miss F. V. Niles, Madison, best crullers, dis..... 2

Miss L. Bement, Oregon, best loaf gingerbread, (sugar,)..... 2

Miss Josephine Peffer, Pewaukee, best loaf gingerbread, (molasses,)..... 2

Respectfully submited,

F. C. Curtis, *Ch'n Com.*

The Committee were unanimous in their commendation of this interesting and important branch of the Exhibition. The mammoth cheese manufactured by J. V. Robbins, of Madison, and weighing sixteen hundred and twenty pounds, was of itself a great exhibition. It had every appearance of being excellent in quality, and certainly no larger cheese has ever been made in America.

Below will be found the statements accompanying the premium articles in this class:

HOW THE BEST JUNE BUTTER WAS MADE.

After the milk is drawn from the cow, it is strained into tin pans about half full, and set into a well ventillated milk room, upon slats. After remaining from 30 to 40 hours, according to temperature, the cream is taken off and put into a stone jar and stirred once a day. The churn is used once in two or three days. The butter is taken out, thoroughly worked, and salted with fine Liverpool salt, one ounce of the salt to a pound of butter. Next day the butter is again worked and packed down for use. Mrs. J. V. Robbins, Madison.

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STATEMENT OF ALMON ATWOOD, WAUPUN.

These cheeses were made in the latter part of June, 1860. I keep forty cows on my farm. I use the milk of two milkings, with no addition of cream—runnet enough to bring the cheese in 40 minutes. The runnet is prepared by soaking in pure water 24 hours, after which as much salt is added as the water will dissolve. I use one tea-cupful of fine salt to 20 lbs. of curd. The curd is then pressed 24 hours in a common lever press. After the cheeses are removed from the press, they are turned and rubbed with fresh butter until cured.

ALMON ATWOOD.

STATEMENT OF MR. E. STILSON.

The cheeses were made the latter part of the month of June. Eighty-five cows are kept on the farm, and a portion of the milk from the same is sold daily in the city of Oshkosh. The cheeses were made from two milkings. The night's milk was cooled down to about 55° Fah. by the addition of cold water. In the morning, the night's milk was heated to 88° by means of hot water, and the cream of the same to 100°, and mixed with the night's and morning's milk. Runnet enough was then added to bring the cheese in from 30 to 40 minutes. The curd was scalded at 105° and the whey drawn off. It was then salted with common dairy salt, and placed in a lever press for two days, during which time they were taken from the press, bandaged and returned. The cheeses were then removed to a cool, dry room, and oiled and turned daily through the summer.

ELI STILSON.

BEST SALT RISING BREAD—RECIPE.

For the rising, take one cup of new milk, one cup of boiling water, half tea-spoonful of salt, stir in sufficient flour to make a thick batter; set it where it will keep warm. When the rising is ready, take one qt. of scalding water, stir in the flour and add a pint of water to cool it. Pour in the rising and stir in flour to the consistency of a thick sponge. When light, mix it stiff and mould into loaves.

MRS. AMELIA PEFFER.

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BEST YEAST BREAD—RECIPE.

Sift the requisite flour into a dish, scald with 1 qt. of boiling water, add a pint of cold water, take 1 tea-cup of yeast, add a small quantity of saleratus to prevent souring, mix stiff and let it rise. When light, mould it into convenient loaves and bake. MISS S. J. PEFFER.

BEST GRAHAM BREAD—STATEMENT.

The sample of Graham bread presented was made of spring wheat flour.

The sponge was set at night with yeast and water, with a table-spoonful of brown sugar added. Mixed next morning and put in a baking dish, and when sufficiently light, baked about an hour in a stove oven. No salt used. MRS. S. WARNER.

GENUINE SPONGE CAKE—RECIPE.

8 cups of flour, 3 cups of sugar, and ten eggs.

MRS. H. W. HAYES, Palmyra.

PREMIUM CORN CAKE—RECIPE.

Two qts. Indian meal, 1 qt. Graham flour, 1 cup yeast, 1 cup molasses or sugar, ½ tea-spoonful soda, ½ tea-spoonful salt.

MRS. H. W. HAYES, Palmyra.

PREMIUM COOKIES—JUVENILE LIST.

One cup sugar, one of cream, one of milk and one tea-spoonful of saleratus. MISS L. BENNETT, (10 yrs.)

PREMIUM CRULLERS—JUVENILE LIST.

Six spoonfuls of sugar, four of butter, and three eggs.

MISS F. V. NILES, (10 yrs.)

PREMIUM GINGERBREAD—RECIPE.

One cup molasses, one-half cup butter, one-half cup buttermilk, two eggs, one table-spoonful brown sugar, one tea-spoonful ginger, one tea-spoonful saleratus, flour enough to make a stiff batter. MISS JOSEPHINE PEFFER, (under 12 yrs.)

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DELLICACIES.

The Committee on Delicacies, in making the several awards authorized by the Premium List, will take occasion to recommend to housekeepers of the State a more general putting up of fresh fruits for the table. With proper care, they may be securely kept, and they are certainly more palatable as well as more wholesome than the too common rich preserves. The jellies are very wholesome, if properly made, and should be in more common use.

Mrs. W. P. Towers, Madison, best peach preserves,	1
Mrs. W. P. Towers, Madison, best strawberry preserves,	1
Mrs. W. P. Towers, Madison, best plum preserves,	1
M. C. Waite, Baraboo, best currant preserves,	1
Wm. A. Boyd, Black Wolf, best tomato preserves,	1
Mrs. D. S. Curtis, Madison, tomato figs, dis.	50c
Mrs. Wm. M. Hough, Madison, crab apple preserves, dis.	50c
Mrs. W. P. Towers, Madison, best plum jelly,	1
Mrs. W. P. Towers, best black currant jelly,	1
Wm. A. Boyd, best apple jelly,	1
Wm. A. Boyd, best currant jelly,	1
S. R. Gunn, Prescott, best crab apple jelly,	1
Mrs. E. M. Williamson, best and largest variety pickles,	5
Mrs. W. P. Towers, best catsup,	1

MRS. E. W. EDGERTON,
MRS. W. H. HYDE,
W. H. HYDE,
} *Committee.*

MACHINERY AND IMPLEMENTS.

MACHINERY FOR AGRICULTURAL PURPOSES.

The Committee appointed to inspect the machinery in this Class, submit the following awards and report:

Price & Co., Janesville, best fanning mill,	Dip. & $3
Nash & Cutts, Janesville, 2d do., fanning mill,	2
J. M. May, Janesville, best wind mill,	Dip. & 15
W. E. Jones, Janesville, 2d do. wind mill,	10
D. J. Powers, Madison, best straw cutter,	Dip. & 5
D. G. Powers, Milwaukee, best feed grinding mill, "Victory,"	Dip. & 10

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E. W. Skinner, Madison, best mole drainer,.....Dip. & 15
F. Gardiner & Co., Carlyle, Pa., best grain drill,.....Dip. & 15
D. J. Powers, Madison, best grain drill, horse rake and corn planter combined,..... Dip.
D. J. Powers, Madison, best feed cutter, feed grinder and corn sheller combined,..... Dip.
Samuel M. Kerby, Pontiac, Mich., 1st premium, "Thistle Corn Sheller," Dip.
Samuel Gumann, Chicago, cider mill,..... Dip.
P. L. Carman, 10-horse power threshing machines, (Pitt's patent,)..... Dip.
P. L. Carman, 6-horse power do. do. ..... Dip.
M. J. Althouse, Waupun, best farm and cistern pump,..... Dip.
J. Burson, Yates City, Ill., grain binder,..... Dip.
J. M. Downey, Delavan, water drawer,..... Dip.
J. E. Page, Girard, Pa., earth excavator,..... Dip.
W. D. Bacon, Waukesha, lever and tread powers,..... Dip.
E. L. Roberts, portable cider mill and press,..... Dip.
Geo. P. Peffer, Pewaukee, hydraulic ram and fixtures,..... Dip.
W. H. Payne, Sheboygan, surveyors' measure,..... Dip.
A. C. Davis, Madison, Aultman & Co.'s threshing machine,..... Dip.

The pump used with the wind mill exhibited by J. W. May, is composed of two cylinders and two composition valves—is made without section pipe, bolts, pumping rods or packing.—It is valuable for general use, and especially for deep and drilled wells. It can be worked by hand or other power, and works remarkably easy. Diploma recommended.

The Brockport drill, entered by S. L. Sheldon, Madison, the Buckeye drill, entered by J. E. Wright, Prairie du Sac, the Star drill, entered by L. J. Bush, Toledo, O., and a drill entered by Mr. M. Thompson, of Madison, appear to be well made, and to possess valuable qualities.

Mr. D. J. Powers, of Madison, exhibited a combined machine, which he calls an "Automatic Grain Drill, Horse Rake and Corn Planter," which appears to possess great utility, being complete in each capacity, admitting of a ready change from one form to the other, as needed by the farmer. A marked feature in the grain drill is, that the teeth are raised from the ground by the power of the team. The expectations of the inventor that this combined machine must come into general use, seem reasonable. Diploma recommended. Mr. Powers also exhibited a combined feed grinder, feed cutter and

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corn sheller, that promises to become valuable. Diploma recommended.

REAPERS AND MOWERS.

Of the numerous articles in this class that were on exhibition, there were two reapers, one mower, and six reapers and mowers combined, three of the reapers being self-rakers. A practical trial of the comparative merits of the several machines was not expected, nor were any premiums offered by the Soeiety on this class of machinery; and your committee can only state, that on a careful examination of the numerous specimens on exhibition, they were very favorably impressed with the substantial appearance and excellence of workmanship displayed, and skill and ingenuity in the improvements in the several machines.

Among these improvements are those that relate to a greater perfection in self-raking; relieving side draft, facility in turning corners, and in changing from reaper to mower, and again to a reaper, as required by the farmer. Your committee will merely call attention to some of the many improvements made in these machines during the last season, as a castor wheel to support one side of the machine to facilitate turning, in the McCormick machine; the facility of raising and lowering the Falvey's Badger State machine, and in readily changing it from a reaper to a mower; the novel and compact mode of folding the Buckeye machine for transit, and mode of arranging the gear wheels; the combination of the well-known excellent qualities of the Seymour & Morgan and Palmer & Williams machines; the new and simple mode of operating a rake in the Esterly machine; and the compact arrangement of the gear in an iron frame, the easy control, by the driver, in raising and lowering the sickle, the facility of its adaptation to uneven surfaces, and the general simplicity of the Kirby machine, as worthy the careful consideration of those who use so indispensible an article as the reaper and mower.

Your committee will only add that they are much gratified

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with the excellent quality of the machinery that came under their observation for examination.

IRA MILTIMORE,
GEO. S. SKINNER,
C. W. OLNEY,
J. M. MAY,
S. S. DAGGETT, } *Committee.*

Mr. May, being an exhibitor of wind mills and pumps, did not act with the committee on these articles.

MACHINERY FOR THE MANUFACTURE OF SORGHUM SYRUP, &c.

The Committee on machinery for the manufacture of Sorghum Syrup and Sugar, regret the report they are obliged to make to the Society.

Upon our books we found three entries of "Sugar Mills," one "Evaporator," one entry of "Syrup," and one "Show of Sugar Cane, Sorghum and "Imphee." On receipt of the entry book, your Committee could find simply one of Cook's Evaporators. On Wednesday evening and Thursday morning, three mills made their appearance in the same neighborhood, and the owners were engaged in putting them together. Such was the State of the case on Friday morning at 10 o'clock. The members of the Committee were fully aware of the efficiency of the apparatus as far as it went. The mills when properly erected were fully competent to their task, and Cook's Evaporator was sufficient to use up all the juice which one mill could extract. They are such as deserve the attention of the farmers of the State, and will be all that is required for their use, except what they make on the farm.

It is true that, on Friday at 2 o'clock P. M., the Mill of Mr. Richardson commenced the work of grinding, and boiling in the Cook's Evaporator. This certainly is not work "during the Fair." We are required to award premiums "only on the exhibition of a *superior machine for the manufacture of* sugar and syrup, and a detailed statement of the whole process, suitable for publication in the Transactions of the Society."—Neither the entries made nor any combination of them, came up to this requirement. Molasses might be made with them,

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and, at times, some grains of sugar produced, but so rarely that they would be the exception rather than the rule. This was not what was required by the statement published.

In the absence of a granulating room, properly heated and ventilated, where the syrup, after defecation, may be kept at the right temperature, sugar cannot be made to any extent, but with the proper apparatus, there can be no question of the manufacture of sugar as well as syrup. Nor do we know any good reason why Wisconsin should not produce, from the different varieties of Imphee and Sorghum, all, or at least a large proportion of the sweetening used for home consumption.

With this view of the object of the Society and our positive instructions, we cannot award any premiums upon the entries made in this class.

Respectfully submitted,

J. G. KNAPP,
A. G. TUTTLE, } *Committee.*
O. P. DOW.

FARM IMPLEMENTS, &c.

O. Coe, Port Washington, 1st premium spiral and rotary harrow,..... $3
J. W. Whitney, Waupun, 2d premium do., ... 2
J. M. Bennett & Co., Oregon, Randall's harrow and broad cast sower combined, dis..... 3
N. W. Fraser, LaPorte, Ind., 1st premium, Fraser & McLellanan's corn cultivator..... 3
— Horlocker, Boscobel, 2nd do., Gillard's corn cultivator,..... 2
Thos. Falvy, Racine, cultivator for field use, dis..... 3
O. W. Clark, Appleton, pair ox bows, dis..... 1
J. C. Wright, Sycamore, Ill., 1st premium churn,..... 3
Jas. Lord, Magnolia, 2d do. churn,..... 2
C. V. N. Kittredge, Madison, superior churn, dis..... 3
Rufus Waterman, Madison, 1st premium cheese press,..... 3
O. W. Clark, Appleton, 1st premium hand rakes,..... 2
J. B. Page, Gerard, Pa., 1st premium farm and road scraper,.....Cert. & 3
Billings, & Carman, Madison, best sod plow for stiff soils,.....Cert. & 3
Milton Webster, Prescott, best steel crossing plow, ...Cert. & 3
Billings & Carman, cast steel crossing plows, and common steel plow,... Cert.
Billings & Carman, best assortment of plows,.....Cert. & 3
John Benedict, Kenosha, railroad and farm gate, ... Dip.
Hiram Griffith, Murphy's patent drill, ... Dip.
A. J. Webster, Menasha, wagon spokes, whiffle-trees, neck yokes,..... Dip.

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We find a small assortment of implements in this department, but some of them are very meritorious and deserving especial consideration. In a few instances, where we regarded the Premium List as failing to do justice to the exhibition, we have gone beyond the prescribed limits and recommended premiums to articles of merit not mentioned in the List. In doing this we have been actuated solely by a desire to mete out justice to all parties interested, and at the same time to promote the interests of the Society.

In some cases there was no competition; but in all instances where premiums were awarded, the superior merit of the article recommended it to the consideration and judgment of the committee. Respectfully submitted,

ORRIN GURNSEY,
D. S. CURTIS,
A. SHERMAN,
} *Committee.*

MANUFACTURED ARTICLES.

CARRIAGES, STOVES, &C.

The Committee in the Department of Manufactures, class 40, in the performance of the duties assigned them, have carefully examined the several articles on exhibition in said class, and have awarded premiums as follows:

Bird Brothers, Madison, 1st premium double carriage,	$10
Bird Brothers, 1st premium single top buggy,	7
Bird Brothers, 2d do. double top buggy,	4
J. B. Wiser, Madison, 1st premium single riding buggy,	5
Bird Brothers, 2d do., single riding buggy,	3
J. F. Randolph, superior trotting buggy, dis.,	Dip.
C. W. Olney, 1st premium double wagon,	5
C. W. Olney, Madison, hammered horse shoes,	Dip.
Bird Brothers, 1st premium single sleigh,	3
Bird Brothers, 2d do. do.	2
G. C. Gunn, Trenton, 1st premium ladies' saddle,	3
Simeon Mills, Madison, 1st premium cooking stove, for wood,	3
C. V. N. Kittredge, Madison, 2d do. cooking stove for wood,	2

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Simeon Mills, 1st premium, "Cottage Oven," parlor stove,..... 2
Simeon Mills, 2d do., "Novelty," parlor stove,..... Dip.
C. V. N. Kittredge, 1st premium, "Coral," hall stove,..... 2
Schumacher & Johnson, Milwaukee, best fire proof safe, dis.,..... Dip.
Schumacher & Johnson, best burglar proof lock,..... 3
C. V. N. Kittredge, 1st premium hollow ware,..... Dip.
G. W. Hoffman, Monroe, copper stove furniture,..... Dip.
Thos. J. Dickinson, Chicago, best show of scales,..... Dip.
Hay & Clark, Oshkosh, 1st premium milk pans,..... 2

L. J. Farwell,
Wm. E. Smith,
Geo. W. Porter, } *Committee.*

CABINET AND HOLLOW WARE, COOPERAGE, &C.

J. Hunter, Oshkosh, best bureau secretary,..... $3
John Limbert, Milwaukee, best display willow ware,.....Dip. & 5
State Prison, Waupun, 1st premium work stand, dis.,..... Dip.
C. S. Redfield, Madison, sample cooperage, dis.,..... Dip.
John Limbert, Milwaukee, sample Wisconsin grown willow,..... 2
John Limbert, Milwaukee, sample willow baskets,..... 2
Thos. Shears, Hillsborough, best ash baskets,..... 2
F. C. Curtis, Rocky Run, best 12 brooms,..... 2
J. H. Waldron, Kenosha, moveable comb bee hive,..... Dip.
M. Webster, Prescott, best flour barrel,..... 3
J. Stewart, Verona, best meat casks,..... 2

LEATHER, BOOTS AND SHOES, &C.

F. D. Fuller, Madison, gents' winter boots,..... $3
F. D. Fuller, Madison, gents' fancy boots,..... 3
F. D. Fuller, Madison, gents' gaiters..... 3
F. D. Fuller, Madison, ladies' winter boots,..... 3
F. D. Fuller, Madison, ladies' fancy shoes,..... 3
Chas. Bigelow, Milwaukee, best calf skin,..... 2
N. B. Van Slyke, Madison, best single harness,..... 5

Your committee feel constrained to express their regret that the competition for premiums in this class has been so very limited—in many cases there being but a single exhibitor.—And we earnestly hope the labors of future judges will be more onerous than ours.

H. W. Hayes,
Ambrose Ely,
S. A. Randall, } *Committee.*

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MUSICAL INSTRUMENTS.

The only articles on exhibition in this class were an organ, manufactured and exhibited by C. Northup, Menasha, and a melodeon of Cleveland manufacture, exhibited by J. R. Eldridge, of Rutland.

The organ exhibits very creditable workmanship; but having only wooden pipes, is, of course, not equal in sweetness and fineness of tone to those having metalic pipes.

The melodeon is possessed of much musical sweetness of tone. There being no competition, no comparison of merits will be attempted. The committee unite in the following awards:

C. Northrup, Menasha, parlor organ,.....Dip. & $5
J. R. Eldridge, Rutland, melodeon, dis.,..... ..... Dip.

A. PICKART,
T. S. ALLEN, } *Committee.*
W. L. UTLEY,

SILVER WARE, &C.

The case of American watches exhibited by Wm. A. Giles, Prairie du Chien, are the only articles exhibited in this class, and the committee recommend a Diploma.

WM. GENNETT,
THOS. DAVEY.

PAPER, PRINTING, &C.

The committee on class 45 have discharged their duties and report:—

Atwood, Rublee & Reed, Madison, 1st premium book printing, ...	$3
Atwood, Rublee & Reed, Madison, 1st do. pamphlet printing,.....	3
Atwood, Rublee & Reed, Madison, 1st do. circulars and handbills,.....	3
Atwood, Rublee & Reed, Madison, 1st do. card printing,.....	3
Bliss, Eberhard & Co., Madison, 1st do. book binding,.....	3
Bliss, Eberhard & Co., Madison, 1st do., law book binding,.....	3
Bliss, Eberhard & Co., Madison, 1st do. library book binding,.....	3
Bliss, Eberhard & Co., Madison, 1st do. fancy book binding, ...	3
Atwood, Rublee & Reed, Madison, 1st do. book work, all in all, ...	7

The Committee regret that the Exhibition in this Class was so meager. In many instances there was no competition.

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The greater part of those on exhibition were very good, particularly in the different styles of Fancy Printing.

WM. C. ROGERS, Ch'n,
W. W. HUNTINGTON.

TEXTILE FABRICS.

G. H. Stewart, Beaver Dam, 1st premium cassimeres,	$5
P. M. Perkins, Burlington, 2d do. cassimeres,	3
G. H. Stewart, 1st do. blanketing,	5
P. M. Perkins, 1st do. flannel,	5
Joel Washburn, Bloomfield, 1st do. men's and boy's clothing,	Dip.
Geo. B. McGie, Madison, 1st do. men's hats and caps,	2
Geo. B. McGie, Madison, 1st do. hat case,	Dip.
Geo. B. McGie, Madison, 1st do. furs,	2
W. Kruger, Sauk City, 1st premium gents' fur gloves,	2
W. Kruger, 1st do. "furs, gloves, and robes,"	Dip.
Joel Washburn, Bloomfield, for "magic robe,"	Dip.

The committee find no premium offered for Cassimere cloth. We have taken the liberty, however, to recommend premiums on the best two pieces on exhibition.

We would suggest the propriety of giving the matter due consideration in making up the premium lists in future, as this class of goods is more difficult to manufacture, finer, and more expensive than Satinets.

E. W. SKINNER,
JOSEPH TURNER,
CLARK G. SKINNER,
MARY G. TURNER,
} *Committee.*

DOMESTIC MANUFACTURES.

The committee on Domestic Manufactures report as follows:

Wm. A. Boyd, Black Wolf, 1st premium, pair woolen kersey blankets,	$3
Wm. A. Boyd, 10 yards flannel,	1
Mrs. F. A. Bevans, Platteville, 10 yards flannel,	1
A. F. Southard, Bellville, 1s premium, 10 yards woolen cloth,	3
Mrs. A. L. Mann, Rockside, 1st do. 15 yards wool carpet,	3
A. F. Southard, Bellville, rag rug,	1
A. H. Thompson, Oregon, rag rug,	1
J. B. Marr, Bristol, rag rug,	1
Mrs. P. B. Stewart, Eagle, 1st premium, 15 yards rag carpet,	3
Mrs. H. W. Hayes, Palmyra, rag carpet,	1
Mrs. Laura Carr, Madison, rag carpet,	1

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Mrs. Samuel Williamson, Blooming Grove, 1st prem. woolen stockings, 2
Mrs. Samuel Williamson, 1st do. woolen socks, ... 1
G. H. Stewart Berver Dam, woolen yarn,..... 1
Mrs. H. H. Coon, Utica, woolen yarn,..... 1
Mrs. S. Williamson, woolen yarn,..... 1
Mrs. S. Williamson, single thread yarn,..... 50c.
I. S. Newton, Middleton, cotton stockings, ... 1
Miss Biddy Nugent, Madison, cotton stockings, ... 1
Mrs. A. B. Hopkins, Prairie du Sac, patch quilt,..... 1
Mrs. Amelia West, Fort Atkinson, patch quilt, ... 1
Mrs. H. H. Coon, Utica, patch quilt,..... 1
Mrs. J. D. Hayden, patch quilt,..... 1
Mrs. J. Baker, Madison, Crochet work, ... 50c.
Mrs. H. W. Hayes, hood and sontag,..... 1
Mrs. D. H. Wright, Madison, best exhibition in cutting and making ladies' dresses, ... 3
I. S. Newton, Middleton, 1st premium men's shirts,..... 2
Mrs. Burgess, Oshkosh, specimen of darning,..... 1
Miss Cora L. Phillips, Lake Mills, (aged 3 years,) patch work,..... 1

We found in many instances but one premium offered, thus giving but little room for competition. To obviate this defect, render satisfaction to contributors, and justice to the Exhibition in this department, the committee deemed it advisable to assume some discretionary power. As the amount recommended for premiums is so small, we trust the awards will be favorably considered. We have deviated from the "beaten track" of former committees, in rejecting all articles not evidently manufactured within the required time. This will create dissatisfaction, no doubt, among those taking only a partial view of the objects of an Agricultural Exhibition. With all due respect to former committees, we are satisfied that remissness in this particular is one cause why the number of articles of merit in this department has annually diminished since the organization of our Society. A more liberal and full premium list, with greater vigilance on the part of committees, would soon revive the interest and vigorous competition of former years, trebble the number of articles entered, and thus make our Society what it should be—a means of developing the industry of the country. With the most deferential respect for the wisdom and good sense of those whose duty it is to make up

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the Premium List, (in this department,) we respectfully suggest that the assistance of ladies might be of essential service. To fully appreciate the reasons for this suggestion, please imagine the embarrassments of a committee on Farming Implements, the premium list for which had been fabricated by the brains of a lady. We suggest further, in view of the commendable zeal to perpetuate the memory of their grandmothers, evinced in the large display of antiquated articles, that a special premium be offerred for the most ancient fabrics of domestic manufacture (?).

As the deficiencies referred to have become a ground of serious complaint and dissatisfaction, we bespeak your candid attention.

All of which is respectfully submitted.

By order of the Com.,

MRS. H. J. STARIN, *Chn.*.
MRS. H. W. HAYES,
MRS. E. W. EDGERTON.

ORNAMENTAL NEEDLEWORK.

The Committee on Ornamental Needlework, report the following awards:

Mrs. D. S. Curtis, Madison, 1st premium, embroidered collar cuffs,	$2
Mrs. D. S. Curtis, handkerchief,	1
Mrs. D. S. Curtis, net shawl,	1
Mrs. M. A. Irving, Madison, embroidered pocket handkerchief,	1
Mrs. M. A. Irving, crochet collar,	50c.
Matilda Williams, Ridgeway, embroidered sleeves,	1
Matilda Williams, embroidered skirt,	50c.
M. Webster, Prescott, embroidery in silk,	50c.
Mrs. H. Abbott, Madison, embroidery, (chenile,)	50c.
Mrs. B. F. Hopkins, Madison, worsted embroidered Affghan,	3
Mrs. B. F. Hopkins, worsted knit shawl,	2
Mrs. James Richardson, Madison, Affghan blankets,	2
J. B. Marr, Boscobel, tidy,	50c.
J. B. Marr, worsted embroided cushion cover,	50c.
Mrs. A. E. Camp, Baraboo, worsted embroidery,	1
Mrs. J. A. Ellis, Madison, embroidered infant's sack,	1
Miss H. A. Benedict, Madison, knit sacks and shirts,	1
Miss Amelia Dorn, Madison, wheel tidy,	50c.

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Miss Amelia Dorn, thread crochet tidy,..... 50c.
Mrs. A. R. Wiser Madison, embroided pocket handkerchief,..... 1
Mrs. A. R. Wiser, embroidered slippers,..... 1
M. Webster, Prescott, worsted work,..... 50c.
Mrs. Eliza Brown, Palmyra, cone frame,..... 1
Miss Barker, Oshkosh, embroidered skirt,..... 1
Miss A. M. Cox, Madison, worsted skirt,..... 1
I. S. Newton, Middleton, knit tidy,..... 50c.
M. Webster, Prescott, round tidy,..... 50c.
Miss E. Decker, Madison, crochet tidy,..... 1
Mrs. W. T. White, Oshkosh, pair worked slippers,..... 1
Miss A. M. Cox, Madison, 2 pairs worsted slippers,..... 50c.
M. Webster, Prescott, knit work by a blind lady,..... 2
D. H. Clement, Willow Springs, crochet collar,..... 1
Miss C. French, Madison, crochet mantilla,..... 1
Mrs. J. C. Botsford, Racine, patch work table cover,..... 2
Mrs. H. A. Peck, Baraboo, plain worked collar,..... 1
Mrs. H. A. Peck, Baraboo, crochet tidy,..... 50c.
Mrs. J. A. Carpenter, Madison, embroidered ottoman cover,..... 50c.
Mrs. A. Abbott, Madison, crochet lamp mat,..... 50c.
A. F. Southard, Bellville, embroidered lamp mat,..... 50c.
Mrs. George F. Brown, Blooming Grove, figured lamp mat,..... 50c.
Mrs. L. J. Needham, Madison, knit hood,..... 1
Miss H. A. Benedict, Madison, pine cone basket,..... 1
Mrs. Eliza Brown, Palmyra, cone basket,..... 50c.
Mrs. W. T. White, Oshkosh, sample hair work,..... 2
Mrs. W. T. White, sample wool flowers,..... 1
Mrs. A. R. Wiser, Madison, what-not,..... 2
Mrs. Eliza Brown, Palmyra, shell table,..... 2
C. H. Allen, Madison, floral fixtures,..... 2
S. R. Gunn, Prescott, artificial flowers,..... 50c.

JUVENILE—UNDER 14 YEARS OF AGE.

Miss Belle Harvey, Lake Mills, pair worked slippers,..... 2
Miss Josephine Peffer, Pewaukee, pair knit mittens,..... 50c.
Miss Catherine Peffer, Pewaukee, knit stockings,..... 50c.
Miss E. A. Waterman, Madison, knit socks,..... 1
Miss C. French, Madison, silk embroidery,..... 1

Having been called upon to act at a late hour, in lieu of the ladies duly appointed, your Committee have endeavored to be thorough and faithful in the discharge of their duties.

It has been our desire to do justice to all, and we trust no exhibition has been overlooked, and that all exhibitors will feel

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satisfied with our awards, as being the best we could do under the circumstances.

In the department of Fancy Work, there are so many articles that do not strictly come under any of the distinctive heads, for which premiums are offered, that we have been obliged to take large discretionary powers.

Taking $3 as the highest premium offered in our "Class," we have graduated our awards accordingly. To decide the merits of individual exhibitions, comparison was made with others in the Hall, as regards skill, taste and labor expended, and also with our idea of what the articles should be to deserve the 1st, 2d or 3d premiums.

Respectfully submitted,

MRS. A. G. HANFORD, } *Committee.*
MISS E. E. CHEESBRO. }

WORKS OF ART.

Your Committee regret that the exhibition of articles in the class for which they were appointed to act as judges, has been meagre in numbers and not very remarkable as to merit, for the most part. They had cherished the hope, that, with the erection of a building in which valuable works of art could be exhibited with safety to themselves, there would have been shown a disposition on the part of both artists and owners to give the public an opportunity to examine such works. They have endeavored to do impartial justice in their awards, and trust that their obedience to the rule of the Society which compels them to refuse premiums to articles which they do not deem intrinsically worthy, will not deter artists and others, unsuccessful now, from sending at another time, when study and practice may have improved the one, and good taste aided by good fortune may have enabled the others to possess themselves of the true treasures of art.

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Your Committee would be derelict to a plain duty did they fail to acknowledge the kindness of Rev. Dr. Norris, of Madison, who presented, not for competition, however, three very valuable paintings by old masters, to wit: *Mater Dolorosa*, an original by Titian; an *Eece Homo* by Gerido, and a *Mary Magdalene*, by Morrichini. Several valuable paintings and engravings, the property of Prof. J. C. Pickard, the Sup't of the Hall, were also added to the collection, but not for competition.

No specimens of statuary or carving in stone were presented in the list submitted to your committee.

Under the head of Oil Paintings, your Committee found themselves embarrassed by what seemed to them a lack of clearness in the Premium List. They doubted as to the intention of the Society in the premises. Was it intended to offer premiums for the "best Oil Paintings," irrespective of subject, and others for "animal paintings," "portrait paintings," &c., which might include or be included in the former? What is intended by "animal paintings?" Is the term to be strictly applied (as we think) to the paintings of animals, as those of Landseer or Rosa Bonheur, for instance, or may it apply to paintings where animals only are prominent objects? Again, as to "portrait paintings," can the term be properly applied to ideal heads, (as those exhibited by Dr. Norris,) or should it refer, as we suppose, to actual portraits painted from life. Unable to ascertain the intention of the Society on these points, we have made two sets of awards of premiums, conditioned upon their approval by the Executive Committee.

If the instruction of the Society is to include only general subjects, as landscapes, historical paintings, &c., in the first item of the list, then we award as follows:

B. F. Hopkins, best oil painting, "Lanscape Scene,"..... Dip.
E. R. Beckley, 2d best do., "Lake Como,"..... $3

If it is not the intention of the Society to exclude ideal heads from the general term "Oil Paintings," as given in the premium list, we should make our awards as follows:

B. F. Hopkins, best oil painting, No. 205, "Belisarius,"..... Dip.

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B. F. Hopkins, 2d best do., No. 206, "Landscape Scene,"..... $3
And should strongly recommend No. 335, "Lake Como," to the Executive Committee for a special premium, as being a very meritorious work by a young artist, ... Dip.

This last award is, in our judgment, the proper one, and we award no premium for "portrait paintings," as we think no entries were made under that sub-division.

We recommend the following premiums:

H. P. Jones, Madison, best fruit painting, 2 pictures, ... Dip.
Miss C. French, Madison, 2d best do.,..... $3

WATER COLOR PAINTINGS.

H. P. Jones, Madison, best painting in water colors, flowers,..... Dip.
We recommend a special premium to S. V. Shipman, of Madison, for two beautifully executed Heraldric Designs,..... Dip.

PENCIL DRAWINGS.

Miss Hattie Hough, Madison, best pencil drawing,..... Dip.

This latter is a copy of Cole's Voyage of Life, which, though faulty in some respects, nevertheless possesses much merit. But one premium is offered; yet we think the specimens presented by two young girls, Miss Alice Mears and Miss Beulah H. Skinner, worthy of note in the order named.

INDIA INK DRAWING.

Mrs. H. D. B. Cutler, Madison, best India ink drawing,..... Dip.

No second premium is offered, but a fancy piece, a female figure, by Miss Mary E. Johnson, of Palmyra, is worthy of special notice.

Passing a long list of others where nothing was presented for premiums, we reached in our list the "Sun Painting." Of all the excellent artists in our State in this department, but one, Mr. J. S. Fuller of Madison, presented specimens of his work, and the Committee take pleasure in saying that they do not make their awards because he was the only exhibitor, but because of the real excellence of the specimens exhibited. His collection of photographs especially, embraced some of the best that we have seen, and few artists are able to surpass

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them. He well deserves, in our judgment, an extra premium report of his collection generally. We award as follows:

J. S. Fuller Madison, best specimen daguerreotypes,..... $5
J. S. Fuller, Madison, 2d best do.,..... 3
J. S. Fuller, Madison, best specimen Ambrotypes,..... Dip. & 5
J. S. Fuller, 2d best do.,..... 3
J. S. Fuller, Madison, best Ambrotype street views,..... Dip.
J. S. Fuller, Madison, best Photographs,..... Dip.

GRECIAN PAINTING.

Mrs. W. Skinner, Madison, best Grecian painting,..... Dip.
B. Smith, Madison, best Oriental painting,..... Dip.

We find in our Class, No. 11, an ornamental sign cut in glass, and painted with admirable taste, by N. P. Jones of Madison. Although not strictly in our department, yet we think we are warranted in recommending it to the Executive Committee for a special premium.

Respectfully submitted,

W. H. WATSON,
MRS. M. L. WATSON, } *Committee.*
MRS. M. A. PICKARD.

MISCELLANEOUS ARTICLES.

Your Committee submit the following list of awards:

Herbert Reed, Madison, bee hive,..... Dip.
S. L. Hart, Menasha, double gun, rifle and shot,..... Dip.
John Muir, Midland, 2 clocks, 1 thermometer,..... Dip. & 5
James Pratt, Milwaukee, lightning conductor,..... Dip.
L. S. Ashbaugh, Milwaukee, atmospheric coffee pot,..... Dip.
Webster Lockwood, Columbus, case of insects,..... Dip.
Webster Lockwood, Columbus, rustic picture frame,..... Dip.
Sprague, Worthington & Cooley, Jackson, Mich., cast steel hoes,..... Dip.
S. R. Gunn, Prescott, maple sugar,..... Dip.
Hiram Griffith, Evansville, Murphy's patent drill,..... Dip.
Wm. P. Crary, Delavan, sample spices,..... Dip.
N. Q. Munger, Brookfield Centre, coke and bloat relief,..... Dip.
Asa Blood, Janesville, obstetrical chair,..... Dip.

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Asa Blood, Janesville, adjustable circular saw,..... Dip.
J. B. Seeley, Chicago, Brigg's hard rubber truss,..... Dip.
Winnebago County Agricultural Society, circular tent,..... Dip.
D. G. Powers, Milwaukee, Map of Wisconsin,..... Dip.
H. J. Starin, Whitewater, maple trees,..... Dip.
N. Chittenden, Madison, vulcanite and gum teeth,..... Dip.
G. W. Rollins, Monroe, rifle, ... Dip.

The clocks presented by J. Muir exhibited great ingenuity. The Committee regard him as a genius in the best sense, and think the State should feel a pride in encouraging him.

The Committee have had some difficulty in the discharge of their duty, owing to the wide range of articles submitted to their examination, and the necessity of covering the whole ground to see them. Several articles have not been found.—The Committee have not time for a more extended report.

D. WORTHINGTON, *Ch'n.*

FARM WORK AND EQUESTRIAN EXERCISES.

PLOWING MATCH.

The following are the awards of the Committee:

M. C. Barber, Lima, (M. C. Barber, plowman,) Whitewater plow, 1st premium,..... $10
C. M. Palmer, Oregon, (C. M. Palmer, plowman,) Whitewater plow, 2d do., 6
John Hall, Madison, (John Rhodes, plowman,) Billings & Carman's plow, 3d premium,..... 3

LADIES' RIDING.

The Committee award as follows:

Miss Anna Comstock, Janesville, 1st premium,..... $20
Miss Ann Cronk, Janesville, 2d do.,..... 15
Miss Ellen Dennison, Madison, 3d do.,..... 10
Mrs. G. C. Gunn, Beaver Dam, 4th do.,..... 5

The Committee have been obliged to make the latter awards almost at random, on account of deciding between accomplishments so equal, and withal so creditable; and they have

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only come to the above conclusion with the proviso that the Executive Committee should be strongly urged to allow to

MISS HUMES, of Fitchburg,
MRS. M. COLLUM, of Beaver Dam,
MISS THOMPSON, of Oregon,

a premium of equal value with the 4th above awarded.

The skill and grace of all the ladies who took part in the riding, were worthy of all praise, and in the opinion of this Committee is rarely equalled anywhere in the country. The Committee do earnestly hope that the prizes will be awarded to all of those in competition, for in no other way can equal justice be done to the competition.

L. H. D. CRANE,
E. MILLER,
J. I. CASE,
E. B. WOLCOTT,
H. M. BILLINGS,
} *Committee.*

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EXECUTIVE MEETINGS.

(SUBSEQUENT TO THE FAIR.)

STATE AGRICULTURAL ROOMS,

Madison, Sept. 29, 1860.

Pursuant to a special call, the Executive Committee met in the Agricultural Rooms, on Saturday, the 29th, 1860.

Present, Messrs. Hinkley, Robbins, Pinckney, D. Williams, C. H. Williams, Hall, Billings, Maxson, Edgerton, Atwood, and Hoyt.

President Hinkley in the chair.

The settlement of claims against the Society, the determination of unsettled questions connected with some of the awards of committees, and the care of the Grounds until the next succeeding Fair engaged the attention of the Committee.

J. V. Robbins was appointed a committee of one to make all necessary arrangements for the safe and economical protection of the property of the Society, until the Annual Exhibition of 1861.

The Secretary offered the following resolutions:

Resolved, That the thanks of the Wisconsin State Agricultural Society are hereby tendered to His Excellency, Alexander W. Randall, Governor of this State, for the excellent and eloquent Address delivered by him at the State Fair, September 28, 1860; and the Secretary is hereby instructed to solicit a copy of the same for publication in the Sixth Volume of the Transactions of the Society.

Resolved, That the thanks of the Society are likewise due to Dr. John A. Kennicott, Dr. D. B. Reid, and Prof. E. S. Carr for the very interesting and

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highly instructive Lectures delivered by those gentlemen on the 26th, 27th and 28th of September, respectively, and that copies of their several Addresses are requested for publication with the Proceedings of the Society.

Which, on motion, were unanimously adopted.

The bills of members of the Executive Committee, for expenses in attending the Fair having been audited and paid, the Committee adjourned *sine die.*

J. W. HOYT, *Sec'y.*

STATE AGRICULTURAL ROOMS,

Madison, Dec. 11, 1860.

As required by the By-Laws, the Executive Committee, on this, the day next preceding the Annual Meeting of the Society, met for an adjustment of the accounts of the Society, &c.

Present, Messrs. Hinkley, Ferguson, Hall, Atwood and Hoyt.

President Hinkley in the chair.

The Auditing Committee, (which by the By-Laws is the Executive Committee, and which is required "to annually examine the books, papers and vouchers of the Treasurer and Secretary, and compare the same, and adjust the accounts between those officers and the Society, and to report thereon at the Annual meeting in December,") made a full and careful investigation of the accounts, and found the same correct, as set forth in the Treasurer's Annual Report.

The reports of Field Crops by the Acre, were next taken up and carefully compared. The awards, made thereon were as follows: (These awards having been published in their proper place, on page 150 of this volume, are omitted here.)

Committee then adjourned *sine die.*

J. W. HOYT, *Secretary.*

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ANNUAL MEETING OF THE SOCIETY.

STATE AGRICULTURAL ROOMS,
Madison, Dec. 12, 1860.

As provided in the Constitution, and pursuant to a published notice thereof, the Fourth Annual meeting of the Society was held in these Rooms, December 12th, at 3 o'clock, P. M.

President Hinkley in the chair.

The Treasurer's Annual Report was presented by the Executive Committee, with full detail of particulars and vouchers, and, on motion of W. R. Taylor, was unanimously approved by the Society, and the Secretary was instructed to publish the same in the next volume of Transactions, with as much detail as the interests of the Society may seem to require, and the limits of space in the said volume justify.

The Secretary submitted a further statement of the estimated value of the property of the Society, and the advantages that must accrue to the Treasury in the year 1861, by reason of the preparations for the Eleventh Annual Exhibition being already made, and on account of the large receipts that will be derived from the sales of lumber and other materials after said Exhibition shall have closed; also of rents to the amount of $225, due from responsible parties, but not yet paid into the Treasury.

After some informal discussion of various plans for the promotion of the industrial interests of the State and of the Society, on motion, the meeting adjourned *sine die.*

J. W. HOYT, *Secretary.*

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TREASURER'S REPORT.

DAVID ATWOOD, *Treasurer, in account with the Wisconsin State Agricultural Society:*

1859.	RECEIPTS.	
Dec. 21.	To Balance in Treasury at date,	$879 81
31.	Cash from D. J. Powers, late Secretary, for Life Memberships,	60 00
1860.		
Mar. 3.	State appropriation,	3,000 00
Sept. 1.	Madison City subscription,	2,000 00
26.	Annual Memberships,	512 00
26.	Life Memberships,	360 00
29.	Trotting Fees,	28 00
29.	Cash for Refreshment Privileges,	99 63
29.	Cash for Tickets sold at Fair,	4,703 87
Oct. 9.	Loan from State Bank,	1,000 00
22.	Cash refunded by M. & M. R. R. Co.,	94 50
Nov. 7.	Loan from N. H. Leffingwell,	1,000 00
	Total,	$13,737 81

1860.	DISBURSEMENTS.	
By Rent and Office Expenses,		$255 01
Furnishing Office,		171 90
Additions to Library,		116 00
Printing and Advertising,		738 46
Postage,		125 67
Secretary's Salary,		1,000 00
Engravings for Transactions,		60 00
Diplomas and Diploma Frames,		199 16
Expressage,		59 90
Lumber and other materials for Fair Grounds,		2,808 73
Earthwork, &c., on Fair Grounds,		595 11
Mechanical Work on Fair Ground,		1,127 75

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Amount paid Clerks at Fair,	540 93
Amount paid Superintendents of Departments,	195 95
Amount paid Gatekeepers,	53 50
Amount paid Police and Watch,	99 75
Expenses of Executive Committee incident to Fair,	352 50
Traveling Expenses of Executive Committee in attending meetings of the Society during the year,	249 80
Refreshments for Officers and Viewing Committees, during Fair.	100 00
Amount paid Madison Fire Companies,	100 00
Amount of Premiums,	2,826 25
Expenses of Committee on Farms,	112 30
Amount paid for Forage,	225 68
Insurance on Tents,	9 00
Watching Grounds after Fair,	73 00
Amount for use of Crockery and Furniture,	58 67
Accounts settled by J. V. Robbins as General Superintendent,	457 00
Amount paid for Printing,	48 50
Amount paid for Telegraphing,	31 38
Amount paid for Flags and Badges, &c.,	75 05
Amount paid Omnibuses and Livery,	49 50
Expenses of Dr. Reid's Lecture,	25 00
Incidentals,	55 41
Unsettled Accounts of last year,	182 75
Amount paid on Note at State Bank,	500 00
Amount of Interest on Note at State Bank,	22 63
Amount of Interest on Note of N. H. Leffingwell,	20 00
Amount of Uncurrent Money,	15 00
Balance in Treasury,	97
Total Disbursements,	$13,737 81

I hereby certify, that the Auditing Committee of the Society have examined the foregoing Report of the Treasurer, with the accompanying vouchers; that they find the same in all respects just and true, and that bills and vouchers for all the above items are on file and open to examination in the Office of the Society.

B. R. HINKLEY,

President and Chairman of Auditing Committee.

DECEMBER 11, 1860.

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ESSAYS, COMMUNICATIONS, &C.

BUILDING STONES AND MARBLES.

BY PROF. EDWARD DANIELS, STATE GEOLOGIST.

The geological formations of Wisconsin furnish a very wide variety of materials for building purposes. We have sandstones, limestones, slates and granites in abundance. There are very few localities where good stone for ordinary uses or rough dressing may not be conveniently and cheaply obtained. Many of our quarries furnish stone of fine quality for substantial and permanent edifices, and susceptible of very considerable ornamentation under the chisel. We have limestones that take a polish, and are sufficiently crystalline to rank as Marbles. In the selection of stone there is much room for the exercise of judgment, and considerable practical geology is brought into use. From the want of it we see structures reared at great cost, and designed to last for centuries, going to decay before the generation by which they were built.—Both in our own country and in Europe we have numerous examples of this kind. In more common uses, as in dwelling houses, laying of side-walks, door-steps, chimneys, furnace-floors, &c., losses from imperfect knowledge of stone and its capacity to endure the atmospheric changes, are constantly

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met wherever we go. In a new country like ours, where the building stones have not been tested by experience, it is especially desirable that we should obtain from Science whatever light it may be able to furnish.

Hoping to aid in the selection of material for economical uses from our rich assortment of stones, I give below the results of my examination of the most important quarries of the State yet opened.

QUARRIES OF RACINE AND VICINITY.

The quarries near Racine are found in the coralline or upper beds of the Niagara limestone. They are opened on the rapids of Root river, and also about two miles north of the City; but are too uneven in texture to be of any value except in rough work. The upper beds of this rock are everywhere unfit for dressing, but furnish excellent lime. The quarries are well located above water, and will always supply the city and its neighborhood with cheap lime and rough stone. No quarries are known south of these in the State.

BURLINGTON QUARRIES.

At Voree, near Burlington, Racine County, some flag beds occur in the Niagara limestone, probably in the middle beds. They are exposed but a few feet. The strata are thin and very regular, with shaly partings, and are cut by smooth seams. They are only good for flagging on account of their thinness. They are quite soft, and easily quarried and cut into shape.

MILWAUKEE AND VICINITY.

The excellent lime manufactured so extensively near Milwaukee, is obtained from the coralline beds of the Niagara, which are exposed at several points west of the city nearly to Wauwatosa.

At Moody's quarries, in the city limits, the rock is very compact, blue mottled with gray, with occasional geodic cavi-

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ties, and numerous well preserved corals and other fossils. It is entirely destitute of stratification, and therefore somewhat expensive in working; but its density renders it a valuable material for filling piers, macadamizing streets and the like, for which it will eventually be required. The rock rises in detached points from fifty to sixty feet above the lake, surmounted by drift. In the drift sand at Moody's, occur calcareous and ferruginous concretions of immense size, affecting the most fantastic shapes imaginable. They have been formed by the filtration of iron and lime among the sand, which by some chemical affinities have been attracted so as to bind the loose materials together around certain centers. They are interesting objects in themselves, and might be used with picturesque effect in landscape gardening. Four miles west of the city, near Wauwatosa, the running kilns are in operation, the rock is softer and on the west is flanked by some soft fine-grained encrinal ledges inclining at a high angle. The face of the quarries here is over forty feet. They are immediately contiguous to the Railroad, furnishing ready transportation without cartage. The cheapness with which lime may be burnt here, its superior quality, and the facilities of transportation, render these quarries highly valuable.

The quarries of Emanuel Chase, Esq., one mile east of the last, lie immediately below the coralline beds, in what I have termed the flag beds of the Niagara. The rock is here in regular strata from three to thirteen inches thick, with thin shaly partings, or compact with conchoidal fracture; even textured of a bluish gray color and intersected by smooth seams, the main direction of which is East 30° South. The seams are occasionally studded with crystals of pyrites and calc spar, and cavities with spar occur. Dip N. E. 15° to 20°. Face of quarry about twelve feet. No flints or fossils are found. Fractured layers of no value alternating with firm stone. This quarry yields excellent stone for steps, window caps, pillars, &c. It is easily worked, splitting into blocks of almost any size required, and dresses handsomely. The Railroad passes within a few feet of the quarry. This quarry

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furnishes the thickest stone found in the eastern portion of the State. It is very similar to that of the Joliet stone of Illinois, which occurs in the same formation. The quarries north of Milwaukee, in the bed of the river near Humbolt, are in the Devonian or Old Red Sandstone formation. The rock is in thin regular strata of a light blue color, with numerous fossil impressions stained by oxide of iron, and sometimes containing crystals of spar and pyrites of iron. The strata are divided by numerous cross-joints, so that they may be quarried with bars and picks, without drilling. These quarries furnish only rough stone. Several quarries in this formation have been opened in the vicinity, but no valuable building stone has yet been discovered in it.

WAUKESHA QUARRIES.

These quarries rank among the most extensive and profitable in the State. They are located Geologically in the middle or flag-beds of the Niagara limestone, and resemble those beds as seen near Wauwatosa in color, texture, and stratification. They furnish better flags, but not quite as good stone for building, where considerable thickness is required. Flints also occur in great quantity in some layers, completely destroying their utility. They are traversed by clean smooth seams, which greatly facilitates the process of quarrying. Great quantities of flagging are exported from these quarries. They can be laid down in Milwaukee at 12½ cents per foot. The principal quarry is in the village, about a half mile from the depot. It presents a face of 25 to 30 feet, and can be readily drained whenever a greater depth is needed. The encrinal beds are seen at this quarry, densely charged with shells, trilobite crinoids and other fossils, reposing upon the flag beds at the back of the quarry. Great quantities of that singular class of fossils, the chambered shells, often mistaken for petrified snakes and reptiles, are found in some of the thin layers. In walking the streets of Waukesha the casts or impressions of strange petrified shell fish are encountered every few steps on the stone side-walks. The thicker strata,

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which are from six to eight inches, furnish cut stone of excellent quality. This stone is very hard, and sometimes takes a good polish, presenting a beautifully clouded surface. The supply of stone is practically inexhaustible. Quarries may be opened for nearly two miles along the river east of the town, within a short distance of the railroad track. At Pewaukee about eight miles, the same stone is quarried. It is rather softer, in layers from two to eight inches thick, and contains no flints. It is more fractured by cleavage planes and irregular lines of separation. If the quarry is opened deeper, the same succession of layers as at Waukesha will probably be found. This quarry is on the railroad. Rough stone fit for cutting are sold on the track at $4 per cord, flags at $8 per cord.

In the town of Lisbon, Section 35, four miles north of the last, is a very fine quarry of the same rock, owned by William Graves, Esq. Here a thicker stone is obtained than at either of the two last, the layers being from four inches to one foot in thickness. The face of the quarry is about eight feet. The upper layer furnishing good flag-stone, and the lower heavier bedded stone fit for building. The latter are very fine grained and hard, polishing with a beautiful mottled surface, long silicified stems of eucrinites, with a few orthoceratites and scattered flints occur on the surface of some layers. Rough sills and caps are delivered at the railroad, two miles distant, at fifteen cents per foot; dressed at from thirty to forty cents per foot. In the town of Genesee, about eight miles west of Waukesha, another fine quarry of the same rock has been extensively worked, known as the Pirmington quarry, now owned by William Johnson.

The strata are very regular, from three to twelve inches thick, and free from flints. It dips gently a little north of east, and has a face of twenty-five feet above water. It is one and a half miles distant from the Railroad depot. The absence of water, quality and accessibility of this quarry, balance the disadvantages of distance to the Railroad track. On Sec. 26, Genesee, Mr. Kendricks', the flag layers come to the surface,

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and are exposed occasionally over nearly half a section. They are here marked by crinoid columns, and a few shells. On W. H. Kendricks' place, some stone have been taken out. They can be quarried here to any extent at a very trifling expense. North-west of Kendricks' house is a low ledge of the encrinal beds, consisting of about fifteen feet of yellowish or light-grey spangeous limestone, of a very uneven texture, as shown in weathering and very indistinct stratification. Above it is five feet, more compact, surmounted again by six feet of soft limestone. On the surface are masses of compact bluish-grey, irregularly bedded limestone, containing coarse corals and a few fossil shells. These upper beds include about thirty-five feet, and are similar to those seen at Menomonee Falls and Grafton. They make excellent lime, and will lay up well in rough walls for fence. Two miles south of Menomonee Falls, the same layers are seen in Howard's quarry. The same fossils are seen as at Waukesha, but the layers are quite thin. At the Falls the encrinal and coral beds occur along the river bank, curiously intermingled with thin layers of blue compact limestone. They are very much broken, and apparently tilted by some local disturbance so as to be of very little use as quarry stone. Two miles north-east, in Germantown, a quarry occurs similar to that south of the town at Howard's, except that the rock is softer.

GRAFTON AND CEDARBURG QUARRIES.

On the Milwaukee river at Grafton, and along the Cedar creek for a mile or two from its mouth, are extensive exposures of the upper beds of the Niagara limestone. They are mostly too soft, too hard, or too irregular in bedding and texture to be of any value for working. An occasional bed occurs of an even texture, moderately compact stone, regularly bedded, which cuts in good shape, and might be extensively used, and even exported, with profit. Considerable of the stone has been taken out and dressed at Cedarburg and Mequon. It resembles in color and texture the Madison stone, but is softer

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and less dense. It is well located above water on the south bank of Cedar creek, and can be taken out in blocks from one to four feet square. It is only two and one-half miles from the lake, and might be cheaply transported to Milwankee, or other points along the shore. It weathers evenly and without discoloration; and for facing buildings, or for caps and sills, would be very cheap and excellent material.

OZAUKEE.

The only quarry of value at this place is about four miles north-west from town, and belongs to Mr. Crocker. It is a grey, or blue-grey, limestone, in some parts resembling the Grafton quarry stone, but harder and more crystalline. It is also thinner and in more regular beds, on the surfaces of which fucoids or fossil sea-weeds are seen. This stone also cuts well, quarries in good shape, and is likely to be extensively sought for as the demand for stone increases.

SHEBOYGAN.

The quarries near Sheboygan are in the upper coral beds of the Niagara. At the Falls, the limestone rises about 22 feet above the river, in thick, well-defined strata. It resembles the rock seen at Crocker's, last described, but is harder and darker colored. The lower layers are very compact, the middle more crystalline, and the upper softer and cavernous, by the decay of large corals, of which it is principally composed. Its cavities often contain calc spar and its fossils, which are dim but numerous, are usually crystalized. On Pigeon river a quarry has been opened, exhibiting a light grey crystalline limestone of even texture, weathering smoothly with a sandy surface. Lines of bedding, well defined but undulating, small cavities occasionally, numerous vertical joints, coarse grooves on the edge of the strata, and destitute of fossils. The top of the quarry is about 30 feet above the lake. This quarry yields beautiful white lime. On Lighthouse Point the same rock is

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seen as at the Falls. These quarries furnish no material fit for ornamental dressing, but an abundance of the best lime and rough stone.

MANITOWOC.

There are several quarries in this vicinity, yielding lime of excellent quality. A very valuable quarry has been opened on the river, about four miles west of the city, by S. W. Baker, Esq. This affords a light grey or white limestone, occasionally clouded green, of moderate denstiy, smooth, vertical fracture, presenting innumerable crystalline facets when freshly broken, and susceptible of a good polish. It belongs to the class of crystalline limestones, and furnishes a marble of fair quality for ordinary uses. It appears massive, but a dim bedding is visible, parallel to which run delicate zigzag seams of some dark mineral, probably iron or manganese. It is traversed vertically by joints which separate it into huge angular blocks. It weathers smoothly and preserves sharp angles wherever it is exposed. The outcrop occurs in the valley of the river, about 4½ miles from its mouth. The stone is well situated for quarrying, and could be carried on flat boats most of the way to the lake. The amount of this stone is very large, and I can see no reason why it should not come into extensive use. If sawed and polished, it would make a front in no respect inferior to the Chicago marble, so much used in that city. To make such a quarry available, works of considerable expense are required, and some outlay in experimenting is almost indispensible. Mr. Baker has commenced the erection of suitable machinery for sawing and polishing, only a few rods distant from the quarry. Unless some peculiarity of the stone, not now observed, is developed, it cannot fail to be a rich source of profit to its owner. This stone seems to be in the same geological position as Crocker's quarry, near Ozaukee.

KEWAUNEE.

The demand is too limited as yet around this new city to require much stone. The crystalline limestone or grey marble

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of Manitowoc, is found here in several localities, but they are deep in the great woods which still cover that county, and have attracted no attention. I have found it in some instances elegantly clouded, and susceptible of a very fine polish,—the ground nearly pure white, and the clouding a delicate blue. A bed of Lithographic stone extends through this county, commencing on Mr. D. M. Aldrich's before mentioned, and making numerous outcrops through Kewaunee and Door Counties. It is last seen near the Door, where Mr. Geo. H. Wood, of Green Bay, has opened an extensive quarry. In some cases, this stone is sufficiently free from seams to supply slabs of considerable size, and its texture is sufficiently fine to adapt it to Lithographic uses. Both Door and Kewaunee Counties are supplied with excellent stone, which will no doubt eventually be largely transported, on account of the easy accessibility of their quarries by water. These counties contain probably more good building stone than half the rest of the State. Their rapid growth in population will soon require towns of more substantial material than wood, and the clearing away of the forest will open up vast sources of wealth in these marbles and limestones.

FOND DU LAC AND VICINITY.

The heavy ledge of Niagara limestone, which passes east of Fond Du Lac, furnishes exhaustless stores of good stone. The lime manufactured there is equal to any in the State. The strata at the base of the bluff might be profitably used for hydraulic lime. The irregular texture and frequency of cavities and joints in this stone renders it unfit for nice dressing, but stone for all ordinary purposes can always be cheaply procured. About seven miles south of the city, on Section 10, Byron Township, the flag beds appear on the surface, presenting very similar characters to those already noticed at Waukesha. They are quarried extensively at Mr. S. Sylvester's place. These strata are thin, even, compact, bluer than at Waukesha, the surfaces roughened by small, oval depressions, free from flints and fossils, and unsurpassed in their adaptation

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for flagging. The quarries are free from water, and may be worked for centuries. These beds seem to have been disturbed here, by some force which has thrown them into a series of low anticlinal ridges, having a direction a little south of east. From these ridges the strata dip either way, thus securing ready drainage of surface water, and facilitating the work of quarrying. These flags are delivered in the city, or on the railroad five miles distant, at from five to six cents per foot, ready to lay down. About 60,000 square feet have been taken out of this quarry. The same strata are seen at numerous points east and south in Byron and Oakfield. On Section 34, half a mile south of Phillips' place, they have been quarried. Some twenty-five feet of evenly stratified rock are seen here, the upper portion in layers from six to eight inches thick, and lighter colored. They would make an excellent cut stone, and would polish well. On Section 19, Oakfield, on Daniel Vaughn's place, some twenty-five feet of the same beds are exposed in a quarry, surmounted by twenty feet of encrinal and coral beds. The last is seen in a low terrace, a little back from the face of the bluff, and presents a perpendicular exposure on the north some ten feet thick.

A quarry has been opened on Section 34, two miles southeast of Oakfield Station, by J. C. Wells. The flag stone are of the best quality and easily quarried. Mr. Wells states that he will deliver them in Milwaukee at from 8 to 9 cents per foot. The upper layers of this quarry are thicker and more crystalline, and might be profitably dressed when the demand for such material increases. The flag-beds are quarried south in Lomira, near Mayville. North, in Calumet County, some nine miles west of Chilton, is a quarry of the same kind, owned by Benjamin Coy. The Clifton quarries are in the lower bed. Large quantities of lime and rough stone are taken from there, and some layers dress tolerably well, and have been used for caps and sills in the new College buildings at Appleton. The proximity of these quarries to the lake and the immense face exposed, renders their products very cheap.

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APPLETON, NEENAH AND LOWER FOX RIVER.

The stone quarried at Appleton, Neenah, and indeed all along the river as far as Green Bay, is found in the upper part of the Trenton limestone. This rock is only fit for rough work. It will not dress well or polish, and its irregular texture and density renders it necessary to take great care in selection where it is to be exposed to the weather. Some of it is apt to absorb water and disintegrate by freezing.

West of Appleton, at Hortonville, some very good stone have been taken out of the lower magnesian limestone. And I have no doubt that some localities may be found where this rock will yield a superior stone.

THE OSHKOSH QUARRIES

Are also in the Trenton. They are located in or very near the city, and supply rough stone very cheaply.

RIPON QUARRIES.

The disturbed condition of the strata before alluded to, has brought up the lower formations in the vicinity of this town, so that both the Trenton limestone and lower magnesian are quarried here in close proximity. Most of the stone in use are taken from the lower beds of the former rock, not far from its junction with the upper sandstone. They are largely exposed along the creek, and on the hills which enclose the valley. They are for the most part too much shattered by joints to be of any value except for rough work, to which they are well adapted. At Comb's quarry, half a mile west of town, some fine unbroken layers occur, which make good flags. Willard's quarry, about one mile west, furnishes a strong lime and good solid building stone; none, however, that will dress.

WAUPUN AND ROCK RIVER VALLEY.

The upper beds of the Trenton limestone have been extensively opened in the erection of the Prison buildings and other

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works. The rock is of more even texture, and in thicker strata than elsewhere in this part of the State. It is free from injurious seams, and can be extracted in blocks and slabs of considerable size. The quarry in the Prison Yard lies only three feet from the surface, and is covered with a light-colored clay. The rock is a subcrystalline bluish grey limestone, in layers from four to ten inches, fracture rough with occasional irregular iron-stained cavities; weathers dirty buff. It is too cavernous to dress well, but works into walls readily. The entire town is underlined with these rocks, at a slight depth, so as to be reached in many of the cellars, even. These beds represent the Galena limestone of the lead mines, which has nearly thinned out here, but still contains some lead and the peculiar coral seen further south and west. Some of the quarries furnish stone which chips tolerably, and in one, the entire surface is polished as smoothly as a marble floor. From this quarry the fine slabs were obtained which are seen in the Prison floor, and which have been used with their natural surface unchanged in constructing many of the cells of the convicts. All the quarries from Waupun south, along the valley of the Rock river, are in this rock, and no valuable stone is furnished till we reach Janesville.

JANESVILLE QUARRIES.

A very fine quarry has been opened in the lower bed of the Trenton limestone by Ira Miltimore, Esq., at Monterey, below Janesville. Just above the junction with the sandstone, occur some calcareous strata slightly mixed with clay and fine sand. The bedding is smooth and distinct, dividing it into strata from six to ten inches thick, which are crossed by clean, vertical seams, usually filled with the red clay of the lead mines. The stone taken from this quarry dresses well, and may be sawed and even polished. It is variegated with curious facoidal and concretionary markings, which give to the sawed or dressed slabs a very singular appearance. This stone is extensively used at Janesville and vicinity, and the Blind Asylum has been constructed of it. The quarry is well located in the

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bank of the river, and is crossed by the railroad. It presents a face of about twenty feet, below which is the upper sandstone, rising some fifteen feet above the river. Near Beloit the same layers are worked to furnish that place with stone. At Shopiere, Clark's quarry is opened in the Galena limestone, and furnishes good rough stone for heavy work.

MINERAL POINT.

The same beds are worked here as at Janesville, and present nearly the same appearance. They have been used in the Court House building. At Platteville some very good stone have been used in the Seminary building, obtained from this formation. There is no very good quarry rock south of the Wisconsin, in our State.

MADISON QUARRIES.

The beautiful and durable building stone, so justly popular at Madison, is found at the base of the lower Magnesian limestone, and probably belongs to the transition layers between that and the next formation below. It is a fine-grained, calciferous sandstone, of very even texture, of a delicate buff color, and distinctly stratified. It contains no fossils or flints, but occasionally has an excess of iron, and care should be taken in selecting it for fronts to reject all blocks which show any tendency to discoloration. This stone dresses readily, and may be wrought into ornamental forms with fine effect. It is obtained from several quarries, opened in the bluffs, about two miles south and west of Madison, where it exists in abundance, and can be cheaply delivered on the cars. Nearly all the substantial buildings in Madison are constructed of this stone. An analysis by Dr. Hayes gives

Silicate of Lime and Alumina,	90.00
Alumina and Oxide of Iron,	3.70
Carbonate of Lime,	6.10
	99.80

East of Madison, in the town of Sun Prairie, the Trenton limestone is quarried extensively for fence and other purposes.

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At Hanchettville, the lower Magnesian limestone has been opened in Hanchett's quarry, on section 16, and furnishes some very good stone. Along the valleys of the Black Earth and Wisconsin, west of Madison, are exhaustless stores of good building stone.

PRAIRIE DU CHIEN.

The stone used in building the new capitol at Madison is obtained at Prairie du Chien. It resembles the Madison stone in texture, but is lighter colored. At McDowell's quarry in the bluffs near the city, it occurs in thick strata of light grey color, even texture, weathering smoothly, with sharp angles, and gives every evidence of durability. It works easily like the Madison stone, but contains rather more lime, and is free from iron. Blocks of almost any size required for Architectural purposes can be obtained. If our capitol edifice is finished with this stone in the same style as it has been begun, it will equal in beauty that of any State in the Union. This stone must eventually come into considerable demand, as nothing has yet been found superior to it in the North-west, unless it be the white limestone of Chicago. At LaCrosse, a stone somewhat similar is quarried in the bluffs, but it is inferior in color and texture. At Montello, Marquette County, the Potsdam sandstone has been quarried. It is usually soft and crumbling, but a bed here is quite hard, weathering with sharp corners and nearly white. It dresses well when freshly quarried, and hardens by exposure. Four miles east of Fort Winnebago, a similar sandstone is quarried, in a long ridge running north-east and south-west, rising some one hundred feet or so south of the road to Marcellon. The strata are distinct, from two to three feet thick, furnishing blocks of large dimensions. It is a fine-grained, sharp grit, with occasional patches which appear to be vitrified, but usually of a very even texture, showing cross lines of deposition; some fifty or sixty feet are exposed here, the upper part very fossiliferous, among which the spines of trilobites are visible. Considerable stone has been taken from this quarry to Portage

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City. It is rather difficult to dress, but is a solid and durable stone. Near Baraboo some sandstones have been quarried. At Garrisonville, some eight miles below, the same bed as at Montello is seen in the bluffs south of the river. The quartzite which is so abundant in this vicinity, is too hard to be quarried or dressed with profit. The quartzite of Portland, Dodge County, which resembles that at Baraboo, is rather softer, and might be used to advantage in heavy buildings. It is located on the Watertown Railroad, about fifty miles from Milwaukee, and can be put upon the cars at a trifling expense. By taking advantage of the joints which intersect it, no difficulty will be encountered in extracting blocks of large size. It will take a rough dressing without difficulty, and might be used for certain kinds of grinding, as in oil mills, to advantage. Some of the Granite and Sienite of the Central and Northern regions might be worked to advantage.

The region bordering on Lake Superior will eventually furnish a great variety of building stones, flag stones and roofing slates, which are now inaccessible for want of communication with the settled portions of the State. The Marbles of the Upper Menomonee have already been noticed in speaking of the Geology of that region. That they will eventually furnish some highly ornamental and valuable stones, is quite certain.

RICHLAND COUNTY MARBLES.

As this stone has formerly attracted some attention, it is proper to notice it in passing. It is found on the south-east quarter of section 28, about ten miles north of Lone Rock. Its Geological position is in the lower Magnesian, near the base. It consists of a vast irregular mass of soft crystalline carbonate of lime, sometimes fibrous, of a reddish white color, and possessing a distinct undulating lamination. Some five feet in thickness and thirty feet in length are exposed, and numerous large masses are scattered over the hillside. It is a stalactite, formed in some ancient cave by the same process that produces the beautiful mineral imitations of icicles, so common in most caves which are roofed with limestone. The water,

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charged with a solution of lime, percolates through the rocks and, encountering the air, leaves a portion of its burden upon the surface of the rock from which it drips, called a stalactite, and another portion upon the surface below, which receives the name of stalagmite. The rock enclosing the Richland Marble has been mostly removed by denuding forces, and the cave in which its percolating waters trickled down drop by drop to form this calcareous deposit, has been left without roof, floor or enclosing walls; yet the evidence of its existence is left in these scattered remains of its once splendid stalactites. We laugh at the brilliant absurdity of the swallow holes left sticking out of the cliff, after its face had caved off, but no very powerful imagination is required to see on the banks of Bear creek, where the great lower limestone has melted down beneath storm and flood, the magnificent cavern on whose walls hung splendid icicles of spar, and whose floor was once studded with forms not less fanciful and beautiful than those of the great cave of Kentucky. But, well adapted as these spars were to furnish the interior of a cave, truth compels us to admit that they are now worthless except as Cabinet specimens.

It is a matter of regret that our State, so rich in good stone, should have sent a block of this worthless material as its contribution to the Washington Monument. This block, prepared with great care and expense, now lies decaying in the yard of the Monument grounds. Some portions of the bed might be used for turning into small ornaments, but for Architectural purposes it is worthless on account of its softness and open texture, which renders it liable to absorb water and disintegrate by freezing.

In the opening of quarries a knowledge of practical Geology will often be found of incalculable advantage. An acquaintance with the succession of the strata often enables one to determine the position of those which contain valuable stone. From want of this easily acquired information we see daily mistakes and losses. Building stones, lime and sand, are often obtained from distant localities, where they could be found by sinking a few feet in the earth at immensely less expense. In

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the selection of stone good and bad are mingled, or perhaps a first rate article lies neglected, while inferior stones are employed in construction. Even in our public buildings, erected at great cost and designed to last for centuries, we see some of the most absurd selections of material, resulting from the prevailing ignorance in regard to the rocky strata of the globe. Professor Johnston states that the materials of which the Washington monument is being constructed are totally unfit for the purpose, and that it is not at all improbable that the monument will fall to pieces, from it's own weight before it is completed. A specimen of the stone containing four cubic inches sustained a weight of only nine hundreds pounds while a cubic inch of good stone sustained eighteen hundred pounds. The Secretary of the Interior, speaking of the Capitol buildings says "The Capitol is a massive building, its walls are thick, and maintain a certain equality of temperature, changing slowly with changes in the temperature of the air. In a change from cold to warm the walls remain for a long time cold and there is condensed upon them a portion of the moisture of the atmosphere as upon a pitcher containing ice water in a sultry day. The stone being porous readily absorbs the moisture, and the natural cement which seems to be slowly soluble in water, is dissolved or otherwise loses its adhesive power, and the stone crumbles to sand. A thick coat of paint carefully applied from time to time, has been resorted to, to preserve, and no doubt tends to preserve the building; but unless some other and more permanent protection be resorted to it is destined to early dilapidation. If left wholly unprotected from atmospheric action for one-fifth of the time that marble structures are known to have stood, this noble edifice would become a mound of sand. The Treasury building and the present Patent Office building are of the same material; and having been in no manner protected, already show signs of decay. The cornice of the Treasury building, which exposes a heavy mass of stone to atmospheric action, begins to be moss grown, and pieces of the Patent Office building have crumbled and fallen. Besides its tendency to disintegration

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on exposure the stone, in its best condition is weak, offering little more resistance to a crushing force than common brick. These buildings cannot with all possible care be long preserved by the means at present adopted. But if the stone could be rendered permanently and absolutely impermeable to moisture the principal difficulty would be removed; and this may perhaps be done by some means known to the arts, or which may be discovered by experiment. For this purpose I would recommend that specimens of the stone be carefully analyzed, and that a series of experiments be tried, with a view of finding some chemical agent, the application of which will prevent its absorption of moisture and thus strengthen and render it durable."

These are notable illustrations of the prevailing carelessness and ignorance in the selection of building stone. It is surprising that in the erection of these magnificent edifices upon which millions of the people's money has been expended, so little pains should have been taken that they have begun to decay, even before they are finished. In selecting stone for building structures which are to be exposed to the influence of weathering, there are several important points to be observed.

1st. Observe how the stone weathers in its natural exposure. If it forms bold angular cliffs, a smooth even surface, not pitted, cavernous or furrowed by irregular disintegration; if its fallen masses have sharp corners, and a solid appearance instead of being split by the frost into small fragments, you may rely upon its durability.

2d. Where stones are found beneath the surface or are only seen above it in rounded knobs, fragmentary and decaying, great caution should be used in employing them. They must be regarded as worthless till the contrary is shown by experiment.

3d. The principal causes of the decay of stone in our climate, are, the absorption and freezing of water, and expansion or contraction of stone consequent upon it. Stones should therefore be carefully examined with reference to this quality. Dr. Ure mentions a test of durability which has been successfully

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tried in England especially with sandstone. A small portion of the stone is immersed in a saturated solution of sulphate of soda, and then exposed to the air for some days. Crystalization takes place within the stone and causes the same disintegration which would follow the absorption and freezing of water. If it cracks and crumbles materially the stone is at once condemned.

4th. The same quarry often produces stone of different qualities. Each layer or strata must therefore be examined, and tested by itself. From neglect of this circumstance, stones wholly worthless by reason of their liability to decay or discolor, are often combined with those free from these defects. Some rocks harden on exposure, others which appear solid when just taken out soon fall to pieces. This last is usually true of those which contain a large percentage of clay.

5th. Stones should always be placed in buildings so as to make their layers parallel as they lie in the quarry. In this position they are less liable to absorb moisture at the edges and to receive injury from the frost.

THE CULTURE OF FLOWERS.

BY MRS. MARY A. C. HANFORD, WAUKESHA, WIS.

ITS PHYSICAL ADVANTAGES.

Hygeia is near of kin to Flora, and is apt to shower some blessings on those who cherish her relatives' pets.

As an occupation evenly exercising body, mind and heart, Floriculture is unparalleled. To the satiated, ennuied world-weary, or the burning, throbbing brow of the brain-weary, or the disheartened toiler over unenlivened pursuits, it is a medicament of unsurpassed virtue, taken as it must be with

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abundance of fresh air and cheerful sunlight. Its recuperative and invigorative powers have been fully tested.

It is not hard work, either mental or physical, that breaks one down, so much as long continued labor which taxes only one set of faculties. Calling into play some powers as antipodal as possible, by varying the pursuits, will help to preserve life and health. Is not Floriculture useful here?

If any pursuits, more than others, tend to prolong a green old age, lovely and delightsome, those which bring the heart-beats in sympathy with, and the mind in near contemplation of nature's works, surely stand pre-eminent. Such is the genial Dr. Darlington, the well known botanist of Pennsylvania; now almost four-score, the beloved of his friends, his heart as warmly enjoying his favorite studies and the communion of kindred spirits as when, years ago, his glad feet, elastic, bounded through the woods of his native Chester.

The late David Thomas, of Cayuga Co., N. Y., will be remembered by all lovers of Horticulture, as well as those interested in the history of the State in which he lived, and where in early life he was a most rigidly upright and able official in his public duties. His last years were spent among the trees, flowers and sciences he loved. Time's burdens so lightly pressed upon him that at 84 he was as much interested as ever in his garden, and mentally and physically almost disowned the supremacy of age.

But it seems partial to single out instances in proof of our assertion. There are many of the beautiful aged whose hearts renew their youth and loveliness with each vernal time. On such, life's

"Latest and most leaden hours
Fall with soft wings, stuck with soft flowers;
And when life's sweet fable ends,
Soul and body part like friends;
No quarrels, murmurs, no delay;
A kiss—a sigh, and so away!"

For woman, too, Floriculture gives what she needs, agreeable out-door exercise. Our ladies are so industrious that health alone is not sufficient inducement to draw them away

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from their allotted sphere of duty. There must be some excitement, some object. The country lady often houses herself more closely than the city lady, whose calls, shopping, excursions and sight-seeing draw her more or less upon the pavement.

House help, so expensive, is also inefficient, and to promote the well being of her family, it is essential that much time be expended over the same little things day after day. Troublesome they often are and vexing, though but seeming trifles; yet important links in the perfect chain of well regulated domestic affairs.

We deprecate the taste or disposition which could lead a housewife and mother to neglect for any other pursuits her true and noblest duties—which, if she has a family, are *within* the walls of home. But if cares and duties are allowed to press unvaried, the spirits lose their elasticity, and peevishness and nervousness ensue.

Rest of mere idleness and vacuity, is hard to endure. Hand and thought must be still busy, but their current changed from too constant dwelling upon her own feelings and the round of in-door life and cares. Would not flower-culture serve this end? More in amount would be accomplished, were pursuits thus agreeably diversified. Come away, housewife, now and then from the "morning's mighty business!"

"Go and request
Great Nature for the key of her huge chest!"

Trust me, you'll find something to lift the weary lids of drooping hope. Petty troubles will take wing, upborne on clouds of sweets.

ITS EDUCATIONAL INFLUENCE.

See you a man who delights in Nature's handiwork; unlettered he may be, but he unquestionably views her beauty through the medium of a refined heart and wakeful mind. Such an one will assuredly grow better and wiser; he is educating himself, though he never enter a school house.

The culture of flowers promotes a desire for intellectual improvement. The physiology and phenomena of plants will

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claim the florist's attention. Does it, at first glance, seem that Flora's various changes will bewilder the investigator? The perfect order and harmony of all her arrangements, and the unalterable adaptation of the links that graduate her proceedings, are readily discovered. Her laws are unerring, and her seeming vagaries fixed regularities.

"In Nature there's no blemish."

A merely mechanical flower fancier and cultivator seems an enigma, a misnomer, where new uses and beauties charm, and new emotions of pleasure start up at every step. What mysteries in the peculiar culture by which hue, and form, and fragrance, are in many sorts illimitably varied; modes of propagation, training and nourishing changing as varieties and the nature and adaptation of soils, with their chemical proportions and affinities.

Invention and originality will be roused. The flower student will scarcely rest content with another's assertion. Other reasons must commend themselves, and experiment prove the trustworthiness of their conclusions. This spirit of investigation evoked will, like hearts in love,

"Negotiate for itself,
And trust no agent."

Useful and important truths yet await the discovery of the Florist, while many remain to be more satisfactorily proven.

A taste for reading will assuredly grow. The one subject is so linked in and in with a large range of other themes, that a general intelligence and culture must ensue. The more enlightened and cultivated the mind and heart, the keener the sensibilities and appreciation of these good gifts, the higher and purer the enjoyment from this close communion with nature.

To the garden how many of the Arts and their specialties are indebted for models in the way of ornamentation. All textile fabrics—everything which is moulded, or wrought, or carved, or brazed, or cast, or painted; scarce anything adorned with design, but borrows an idea from leaf, or stem, or fruit;

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from bud or flower, or spray of trailing vine and graceful foliage.

Among the floral beauties are themes for romances, poems and sermons!

Flowers awaken in us thoughts of contentment, peace, humility, gratitude, gladness and love. To be among them, work among them and commune with them, is better than half the chatty gossip, indiscriminate reading, or uninstructive reverie in which we too often indulge or participate. Good and communicative spirits dwell in their fairy cups, and all they impart is worth the treasuring! In those little flower borders, what inexpressible beauties are continually developing! From the time the soft primal leaves first pierce the mellow earth, thro' all the stages of growth to the ripened fruit and after decay, there is change, and beauty in that change. Each day the Unerring Hand fashions and perfects without erasure and retouch.

It is no mere transient pleasure, leaving nothing behind, to which flowers and their culture give birth. Flower beauty, studied and appreciated, awakens purity and love serene and beautiful in the heart, humanizing, elevating and refining both taste and action. Where the cottage is vine-draped and flower-grouped without, we ever expect to find within some good hearts and gentle manners—some

> "Happy soul, that all the way
> To heaven, hath a summer day."

Flower culture is one of the happiest mediums of instruction for youth. All children love natural things, if their own natures have been neither crushed or pampered away. On the contrary they abhor abstruse things, dry details which may be only fixed in memory by pure mental labor. But give them a lesson that may be conned through the tangible means of something external, some symbol which they can see, feel and appreciate. You will find hence a path to a broad land of brains you little guessed those tangled curls hedged about. It would seem that the Natural Sciences properly presented should be among their earliest studies.

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The simple care of a little flower garden will be for them at first both books and teacher—till presently they crave the books and teachers that open to them a deeper insight of nature. The out door work in fresh air and earth will give them not only

"Cheeks like apples which the sun hath rudded,"

but more strength and more sense to meet the duties of after life than if double the time were spent in those tender years in the school room. Memory, reflection, calculation and logical analysis will be strengthened; taste will be developed, and a love of harmony, as color, form and size are studied in the massing and grouping of sorts and varieties—

"In emerald tufts, flowers, purple, blue and white,
Like sapphire, pearl and rich embroidery."

Beneficially will such a pursuit act upon their affectional natures, encouraging social and kindly feelings. The feet and hands that must step so carefully and handle so gently the floral pets, will be more tender and less boisterous within doors, the spirit, as a consequence, more amiable, drawing brothers and sisters more lovingly together and remaining in after life a sympathetic bond of union.

The holy spell of a loveable childhood's home and teachings, treasured in memory, is an active conducer to virtue and a preserver from temptations amid the excitements of after life. Back to the flower-surrounded childhood, oh what recollections turn and thrill! The genial influences of that home are ineffacibly impressed.

Was it your happy lot to pass your early life in a rural home? How many, many things were fastened upon your childish memory by the aid of flowers! How indissolubly instructions, as well as times and events, are connected with these sweet reminders!

ITS ADAPTEDNESS TO CIRCUMSTANCES.

This health-giving recreation, this mind and heart educator, is within the reach of all who have a strip of earth out under

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the blue sky or a window through which streams heaven's sun and air. If not chosen as a regular pursuit, it may yet receive the attention of little interstices of time, which may hardly be said of other recreative enjoyments. A few books and well applied leisure are sufficient to give an open sesame to a wide spread field, which may be explored only just so far as the cultivator chooses; yet any limit of space, time or money finds its reward.

New creations and plans may be constantly devised, even in a small garden; further training and nourishing added. Hast thou the ways and means,

> "Through sweet diversity
> This garden to adorn with all variety,"

be assured for every kind attention the flowers will gratefully blush their thanks.

The rich find in it a pure source of enjoyment. From worldly temptations Flora's voice, though gentle, must irresistibly keep them unspotted.

The cottager who has striven to elevate and refine his thoughts, will find his heart swell with delight till his eyes grow misty with the gladness of his enjoyment over his few treasured varieties.

The pleasure, as well as success, is alike common ground to both. The flower feet of both are planted in the same earth, and from its brown juices draw the same nutriment. Quite different from the human brotherhood where one,

> "Feeding high and living soft,
> Grew plump and able-bodied,"

and the other wearily toiling on plainest fare. The stem rears, the limbs expand, the drapery of leaves and flowers spread—not in the one case of soft texture, rich fabric, gorgeous colors and flowing dimensions, and in the other coarse, poor, sombre and scant. Nature shows no aristocratic preferment: the same rain and dew, wind and sun, come alike to all. Any partial blessings fall only upon the expendings of care and labor.

We have suggested Floriculture as an occupation befitting

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woman. Indeed its extension in our New States *cannot* be done without the encouragement, nay, the assistance of woman's head and hands. As Dr. Darlington says of Botany, (which is one of Floriculture's handmaids,) "to wives and daughters we must look for salutary reformation in these pursuits;" "properly educate and invoke the co-operation of the ladies." Mainly through them may we hope to see the surroundings of our Western cottages made beautiful and inviting. Husbands and fathers have so much of the sternly necessary ever before them, that beautifying and adorning may be forgotten unless duly prompted.

Blessings on our Western women! In many a "settler's cottage,"—"far from all people's praise," save her own home circle— is the "Una" who in more ways than one has

"Made a sunshine in a shady place."

ITS ASSOCIATIONS AND SUGGESTIONS.

We have looked at flower culture in its useful points of view. To souls with a throb of romance, a touch of poetry, there are other sweet inducements. Though needing not perhaps such occupation, either as Physician or Educator, they will have flowers about them for the love of them. The heart will go out toward them as naturally as the tender, leaf-hidden blossom creeps towards the sun's ray, and which it will as assuredly appropriate to itself for its own warm expanding and the rich coloring needed for its own life.

"Fairies use flowers for their charactery,"

and we mortals cannot do without them. The child untaught loves them—will fasten them in its breeze-tangled tresses and about its dress. Children of a larger growth, when they cannot get the real

"Summer's velvet buds,"

and the sun-painted flowers, must have their counterfeit. An old poet declared,

"All that's good is beautiful and fair."

However this may be, there is nothing useful in this world of

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ours, which God has made, but has some beauty blended with it. Shall mortals then separate, hold fast the one and cast aside the other? The whole economy of nature might be planned by the utilitarian, and carried on, homely and unadorned, but for man's delight and elevation, Omniscience hath the useful beautified. There is no gift of our kind Father more readily or richly laden with the wealth of association.

Let me but see or hear the name of certain flowers, familiar in the sunny clime of my childhood's beautiful home, and an electric chord is struck which vibrates through my whole being; the soul thrills with blessed memories, and the swelling heart presses sweetest tears to the eyelid's brim. Days, years and changes are as nought; back again with the times and things that were, a flowerless, stove-warmed room is even in fancy redolent with past odors, some once loved fragrance, which, in this colder clime, I may have rarely breathed.

The riches of a whole past are revealed by one breath of wafted fragrance. The teachings and precepts of those we loved and lost, come to us season after season in the fairy flower cups, fresh and distinct as when by littles here and there, line by line, they were instilled in the youthful mind.

Most intimately connected are flowers with the joys and sorrows of life. They mingle with home, social and public special occasions, and lend their sweet power to soothe or enliven, as the scene be sad or gay. Ah, how tenderly and thrillingly ever afterward are they connected with the "other days" of memory, which we love to "summon up"

"To the sessions of sweet, silent thought."

Year after year fondly we fancy old time tales rung out by the drooping flower bells on their waving stems. Romances and histories are written on the fair, the glowing or blushing petals which only they who have the key may read. Memories are awakened by opening buds. The falling and closing flowers, which seem to tell a requiem for crushed hopes, open old wounds but to pour the sweetest balm upon the tender heart. They assure us that our best and truest joys cannot die, tho'

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"here in time" hid from sight. Our hopes and aspirations, bright, pure and high, may be affected by blight and decay—they are frozen, crushed and fade away.

"The seasons bring the flower again;"

so will these hopes when the storms and winter of our physical life are past,

"Rewaken in the spiritual prime,"

no more to be blasted, but forever enjoyed in full fruition.

To our gardens we give unwearied care, planting with choicest varieties of best sorts, and these nourish to highest perfection. So in the gardens of our souls, may we cherish the best thoughts and knowledges, plucking out every weed that would choke the roots of love and charity; subduing the first uprising of every unholy plant, that our souls may be a well-dressed garden when the Master claims it for his own, fit for the adorning of His Kingdom.

BEST PERIOD FOR CUTTING GRASSES.

[From a Prize Essay on Haymaking, in the Journal of the Royal Dublin Society.]

BY THOMAS BALDWIN,

LECTURER ON AGRICULTURE AT ALBERT MODEL FARM, &C.

In order to obtain from a given area of meadow land the largest quantity of nutritive feeding, the first question which merits attention is, At what stage in their growth should the grasses be cut? To answer this question, it becomes necessary to trace the changes that take place during the growth of the plant.

For the information of the non-scientific reader, it may be remarked that plants are composed of—

1. Water.
2. Sugar, starch, and similar compounds, intended for sup-

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porting respiration. In the absence of fatty matter in the food, these compounds may go to form fat in the animal body.

3. Oily and fatty matters, which are generally regarded as intended for producing fat in the animal system. For fattening purposes, 1 lb. of fatty matter equals 2½ lbs. of sugar, according to the carefully conducted experiments of Lawes and Gilbert.

4. Flesh-forming compounds, such as gluten, albumen, casein, &c. These are the most valuable constituents of plants.

5. Mineral matters, which supply the same kind of matters to the bones and tissues of animals.

6. Woody fibre, which gives the necessary bulk to the food, and which is not regarded as directly affording nourishment to animals, notwithstanding that experiments prove that the stomach is capable of digesting a portion of it.

The value of a given quantity of any plant, in any stage of growth, depends upon the proportions in which these several constituents exist in it. Now, we find that grasses, while the blades are young, contain more water than at any subsequent period; that, as they grow in size and vigor, sugar, fat, and nitrogenized matters are produced; that up to a certain stage, while they increase in bulk, the quality of a given weight of that bulk is improving. If permitted to go beyond this stage, the quantity of woody fibre is rapidly increased at the expense of the sugar, and hence the quality deteriorates, so far as it depends on this constituent.

It is admitted on all hands, that the grasses continue to increase in bulk and improve in quality up to the period of flowering; but beyond this, we are woefully deficient in our information on this important subject.

It may be regarded as true of all meadow lands, that the weight of the crop is actually lessened by being allowed to ripen its seed. There are, it is true, a few grasses* which yield more when ripe than when in flower; but they never

* Crested dog's-tail grass (*Cynosurus cristatus*,) yields twice as much per acre when ripe as when in flower.—*Vide* Sinclair's "Hortus Gramineus Woburnensis."

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predominate in well laid down land; and even should the acreable produce, when the grasses ripen, be a little greater than when in flower, yet it would not be economical to allow them to advance to that state, unless the excess so obtained exceeded the loss which is invariably sustained in the aftermath when the plants are allowed to mature their seed before being first cut—a loss which, on the average, amounts to half the bulk and value of the aftermath.

We may, then, safely assume that, so far as the quantity of produce (including the aftermath,) is concerned, we obtain the maximum by mowing the grasses when in blossom. But, before recommending this as the best stage of growth at which to cut the grasses, we must consider their *quality* at the different periods. We possess little reliable data to guide us in this inquiry. In George Sinclair's work we are presented with a statement of the relative nutritive value of all grasses at the time of flowering and when ripe, and his estimates have been quoted by every writer on the subject since his day. We always regarded his experiments as almost worthless, and as calculated to give rise to erroneous conclusions. In these experiments it was assumed that the quantity of matter given up by any grass to boiling water was a test of its value; at all events, as compared with other grasses. No man who is acquainted with the present state of the science of agriculture will accept this notion, and the sooner it is expunged from our text-books the better.

To determine the relative value of the several grasses, we require a full and rigid examination, chemical and practical: chemical, to test them from a scientific point of view; and practical, to check erroneous theoretrical deductions. And we require a similar inquiry to elucidate the relative value of any grass or meadow in different stages of growth.

When we undertook the preparation of this Essay, we placed ourselves in communication with the leading agricultural chemists, in the hope of eliciting some specific information on this subject. In reply, Mr. Lawes, of Rothamstead reputation, remarks:—"I am afraid you cannot obtain any satisfactory

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information; . . . . the ordinary method of estimating the elements of nutrition of suculent pasture is not to be depended upon." And Professor Anderson, Consulting Chemist to the Agricultural Society of Scotland, "deeply regrets that no opportunity ever presented itself to him of examining the subject, which is one of some importance."

The only scientific attempt at elucidating the subject, with which we are acquainted, is that of Dr. Thompson of Glasgow. In his experiments on the food of animals, which were carried out in 1845 at the instance of the Government, he analyzed perrennial rye-grass at different stages of growth, and gives the following table of the composition of the grass before and after flowering:—

	June 18.	June 23.	July 15.
Water,	76.19	81.23	69.00
Solid matter,	23.81	18.77	31.00

We see little in this table to elucidate an important subject. We are not informed of the acreable yield of the grass at the different periods, nor are we presented with satisfactory information as to the nature of the "solid matter," further than that the composition of every 100 parts of the mineral matter of the stem and seed of the matured plant is given as follows:

	Stem.	Seed.
Silica,	64.57	43.28
Phosphoric Acid,	12.51	16.89
Sulphuric Acid,	.....	3.12
Carbonic Acid,	.....	3.61
Chlorine,	.....	*trace.*
Magnesia,	4.01	5.31
Lime,	6.50	18.55
Peroxide of Iron,	0.36	2.10
Potash,	8.08	5.80
Soda,	2.17	1.38

This table shows that, weight for weight, the seed abstracts 30 per cent. more phosphoric acid, and nearly three times as much lime, from the soil as the stem; but Dr. Thompson's researches want that measure of completeness which alone possesses scientific value.

Mr. Way, in 1849, analyzed a great many of the artificial

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and natural grasses; but, unfortunately, he did not give to his investigations much practical value, nor throw any light on hay-making. We have, however, gleaned one significant fact from his analysis—a fact which goes far to prove that all grasses do not yield the maximum amount per acre by being cut when flowering. He found that the stems of cock's-foot contained in 100 parts as follows:—

	When coming into flower.	When Seeds were ripe.
Water,	70.00	52.57
Flesh-forming constituents,	4.06	10.93!
Fatty matter,	0.94	0.74
Heat-producing principles,	13.30	12.61
Woody fibre,	10.11	20.54
Mineral matter,	1.59	2.61

Now, when it is considered that the flesh-forming constituents are by far the most valuable portions of the food, this table acquires great importance. We see that the fatty matters and heat-forming principles (such as sugar, starch, &c.,) are slightly diminished, while the albuminous compounds are increased 250 per cent.!! The acreable yield of the grass in the two stages is as 279 at the time of flowering, to 265 when the seed is ripe; so that the amount of muscle-forming nutriment obtained from an acre of this grass is considerably more at the latter period, and it is highly probable that subsequent research will prove the same of other grasses. Thus we see the inaccuracy of the statements which occur in many of our agricultural handbooks, that "cock's-foot is in its prime when coming into flower." But, taking into account the value of the aftermath of cock's-foot, which, in quantity, is to the first crop as 279 to 119, it is not judicious to permit this grass to become dead ripe before being mown. The time-honored practice of ages may in this particular instance be safely followed. In all periods of the historic age, the haymaker has been advised to mow when the grasses are in flower. The instructions of the rustic Roman authors on this point are exceedingly clear. Pliny's words are—"The time of cutting is when the stalks begin to lose the flowers and to harden; it ought to be cut before it withers"—an advice to which, after

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the lapse of centuries, little can be added, and which shows how old is the idea that the maximum amount of nutriment is yielded by grasses when in full bloom.

As all grasses, however, do not flower at the same time, we have to offer the following rules:—

1. In the case of Italian rye-grass, always mow on the appearance of the flowers, as this grass is such a fast grower that, if cut at this stage, a second cutting is obtained equal to the first, and, on good land, a third and fourth very little inferior.

2. Ordinary rye-grass may be allowed to produce the flowers.

3. Clover is best cut when the heads are in full blossom.

4. Mixed meadows should be mown when the bulk of the herbage is in full flower, or when the seeds of the earliest grasses are fully formed, such as sweet-scented vernal grass (*Anthoxanthum odoratum*), meadow fox-tail (*Alopecuris pratensis*); and the late grasses, as crested dog's-tail (*Cynosurus cristatus*), and meadow fescue (*Festuca pratensis*,), are just begining to produce the floral organs. With us, Timothy (*Phleum pratense*), Italian rye-grass (*Lolium Italicum*), perennial rye-grass (*Lolium perenne*), and cock's-foot (*Dactylis glomerata*) flower during the latter half of June, which, as thesse grasses constitute the great bulk of good meadow land, is our mowing season.

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THE HORTICULTURAL EMBELLISHMENT OF SCHOOL-HOUSE GROUNDS.

From an Essay prepared for, and published by, the Wisconsin State Teachers' Association.

BY MRS. HOYT, MADISON, WIS.

* * * * * * * * * *

The subject presents itself as having educational bearings of the largest importance.

First, such embellishment promotes health, by purifying the atmosphere through the agency of vegetable growth. That changes may be effected in climate and condition of soil, by the introduction of vegetation into regions otherwise inhospitable, is no longer doubted.

* * * * Of scarcely less importance, is the office of trees and shrubs in rendering the temperature of any locality more uniform, and the air purer, by warding off cold winds, moderating the fierce rays of the sun, and protecting from dust.

Second, it promotes health by leading to more general and cheerful exercise. The fact that children, especially school children, will play under almost any circumstances, is of no value as an opposing argument. Children are restless, and inclined to more general activity than adults, by reason of their comparatively larger nervous development. They are, moreover, wanting in the power and habit of reflection by which admonitory lessons are gathered from experience. So they will often continue the most exhausting plays until nature is overpowered by fatigue, not so much because they choose to, as that they must.

Now the quiet of the school-room, the restraints it imposes upon the body, its demand upon the mind, are all opposed to this, and have a tendency to intensify the energy and hearti-

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ness with which they would, anyhow, enter upon out-door sports whenever opportunity offered. But when the conditions are furnished, the activities of the play-ground become attractions to the spirit, as well as necessities to the muscle. Upon an ample lawn, with here and there a tree for story-telling shade, or the pleasant game; with shrubs for fragrance, and evergreens to relieve the golden of the summer day; with bordered walks and quiet nooks, and over all the witchery of shifting sunlight and shadow, the inertia of the most sluggish will be overcome, and all that is frolicsome and joyous in more spontaneous natures aroused.

Remove all this and leave but a bald door-yard, or the monotony of the street, and children will race around, to be sure, and though in the swelter and glare of noon, will turn somersets in the dirt, and beat their brains against lamp-post or fence-rail, in the headlong chase of some sort of amusement, because they don't know what to do, and must do something. A comparison between the health-invogorating effect of the exercise taken under these different circumstances, would be as that of a mid-day douche of nitric acid, to a bath of pure water. Exercise, to be beneficial in the best sense, must be a refreshment to both soul and body.

Third, it promotes health by inducing a pleasant state of mind. "Delightful scenes," says Addison, "whether in nature, painting, or poetry, have a kindly influence on the body, as well as the mind; and not only serve to clear and brighten the imagination, but set the animal spirits in pleasing and agreeable motions. For this reason, Sir Francis Bacon, in his Essay on Health, prescribes to his readers a poem, or a prospect; and advises the pursuit of studies that fill the mind with splendid and illustrious objects, histories, fables, and the contemplation of nature." "The body and mind," says Sterne, are like a jerkin and its lining. If you rumple the one, you rumple the other." And Wordsworth, in one of his most charming and philosophical poems, represents nature as promising to train into beauty, both body and mind, through the thoughts given to her favored child:

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"She shall be sportive as the fawn
That, wild with glee, across the lawn
Or up the mountain springs;
And her's shall be the breathing balm,
And her's the silence and the calm
Of mute, insensate things.

"The floating clouds their state shall lend
To her; for her the willow bend;
Nor shall she fail to see,
E'en in the motions of the storm,
Grace that shall mould the maiden's form,
By silent sympathy.

"The stars of midnight shall be dear
To her; and she shall lean her ear,
In many a secret place,
Where rivulets dance their wayward round,
And Beauty, born of murmuring sound,
Shall pass into her face."

But that the mental condition reacts upon the physical, is a proposition so well established that it needs no proof. Confirmations of it are in our daily experience; observations of it are continually before our eyes, so that to think of it, is to admit it. And yet how often is it left entirely out of thought in the arrangements made for those most sensitive to its neglect. That the mysterious interdependence of the material and immaterial, which every one acknowledges, and no one explains, should be more direct, and a regard to it more essential in early than in latter life, needs but a moment's reflection. In the early, and during all the growing years of the animal body, its whole texture is more delicate and impressible than in the maturity of its strength. If this is true in regard to food, temperature, and clothing, how much more in reference to those influences that operate upon it through the ever active thought?

* * * * * * * *

The way in which this can be most readily done, is by keeping a variety of agreeable objects before the eye; since, of all the senses, sight is the principal one through which things material impress the mind; the qualities of matter, by which

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the character of external objects is conveyed to the senses, being, chiefly, those that appeal to the "seeing eye," as form, color, motion. This is universally recognized; and a thousand times oftener it is said, with expectant joy, we shall *see* this, or that, than that we shall smell, touch, taste, or even possess. Again, of those three distinguishing qualities, form has been truly called "the grand characteristic of matter." But all this—objects of infinite diversity of form, color, and motion—are in the landscape, with which "a dood deal of nature and a little art," may surround the places where children are to spend so many of the waking hours of the most formative period of life.

What we want, is to keep the youthful mind in that state of pleased aceeptance of the present which is its health attitude towards the body. To explain how it is that nature operates more successfully in this direction than all the artifices with which man has attempted to imitate, or supercede her, would be to be wiser than all philosophy, more diligent than all observation. Yet who has not felt that

> "All natural objects have
> An echo in the heart; and still maintain,
> With the mysterious mind and breathing mould,
> A co-existence and community."

The same arguments that show anything favorable to physical, will apply with equal force to intellectual development. Indeed a consideration of the one has already involved the other. Yet, because it is easier, it is much more common to trace the influence of the material upon the mental, than of the mental upon the material. So the first care is for the body, even when beginning in earnest the culture of the mind. None but an insane person would undertake to fix the attention of children, and task their mental powers, when the bodily condition was that of suffering, or even uncomfortableness in the ordinary sense. It is only in the strength of years, and under the pressure of necessity, or the allurements of ambition, that we see examples of that ascendency of the soul over

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all external circumstances, by which it is enabled to completely ignore the body, or say to pain, "Thou art a word."

The first intellectual advantage, then, claimed as the result of the horticultural embellishment of shool-house grounds would be through the better physical, by which the superior mental condition is secured.

Second, it advances intellectual culture by furnishing objects of interest for examination and study. By a little judicious forethought, trees shrubs and flowers transplanted to the grounds where children go for repose from in-door tasks, may be made more valuable than so many books added to their library. For where are the written pages containing all that has been left upon the face of nature? Who, by searching, can find out and communicate to the mind of a child knowledge like that acquired when, with its own aroused intellect and eager eyes, it stands in the presence of God, handling His works, and "thinking His thoughts after Him?"

True, not every subject upon which the young student is called to labor, may be illustrated, and his mental powers in reference to that particular mastery assisted, by such natural objects as belong to the ornamentation of the school premises; but their range is much wider than would at first appear: and the freshness and vigor of thought aroused in reference to special studies, could but be to the advantage of all.

> "Nature is man's best teacher. She unfolds
> Her treasures to his search; unseals his eye,
> Illumes his mind, and purifies his heart.
> An influence breathes from all the sights and sounds
> Of her existence; she is wisdom's self."

As a third intellectual advantage, the unconsciousness with which the lessons of nature command the mental powers may be considered. This is of value to us all, and always; but incalculably so to the young in their first efforts to meet the stern demands of school discipline. It is the nature of the mind to think; not to study upon prescribed subjects, at stated times. So the whole system of education is artificial—with more or less of violence, the merest device to entrap the body

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and compel that application found needful to the highest educational results. Now whatever tends to divert the mind from a recognition of enforced rules and tasks is so much gained, both to the more vigorous action of the mind itself, and to that intellectual enjoyment which is the end of all discipline and all acquisition.

* * * * * * *

The influence of natural objects in developing a lofty and vigorous imagination in the minds of children, may, also, be placed among the most positive intellectual results of embellishing the school-house grounds. * * * * Before the business of life has thrust its cares upon the mind, or its sordid ambitions perverted the simple desires of the soul, it is the sacred duty of those who have charge of their education to see that this most ennobling faculty of the mind receives its full share of nurture and exercise, so that it may ever be a source of the highest joy and the means of a wider usefulness.

But this cannot be done without the presence of such objects as quicken and multiply intellectual perceptions of beauty, design, fitness, &c., since it is the office of the imagination to gather up, select and combine, out of these, those that complete its own ideals of excellence. To attempt to do this would be as vain as to undertake to teach the art of speech without the aid of vocal utterance; or to instill the emotion of love with no object by which it could be awakened. Books cannot be depended upon, for though history, poetry, and fiction furnish subjects for contemplation, exalted as the imagination itself, they are mostly beyond the scope of the undeveloped mind. Works of art cannot be had, because too rare and expensive, neither would they answer just the purpose, in either character or capacity, for children.

Yet models are just what is needed, and material through which may be elaborated, in the studio of the brain, the otherwise impossible. And where shall we go for such symbols of that we would see reproduced and vivified in the youthful

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imagination so soon as to the works of the Great Artist, who

"Divinest use in beauty has conceived;
Divinest beauty in all use achieved."

* * * * * * * * *

The first moral advantage, then, gained through the embellishment of school-house grounds would come by virtue of those improved conditions, assisting perceptions of truth, goodness, beauty, followed by corresponding emotions. That which is seen clearly will be felt deeply.

A second, and one which lies at the very foundation of moral improvement, is that of promoting self-respect. Whatever has a tendency to detract from this degrades; and by what means it may be increased, the same elevates the moral being. As the individual approaches maturity, this depreciation or elevation may be the result of an indefinite multiplication of circumstances; as the state of the health; success or failure in business; the doctrines believed; the thoughts, feelings, aims, and to some extent, the externalities of the daily life. But to children, who are ignorant of the value of pursuits, the dignity of the soul, the uses of discipline, or the quality of either action or emotion, that sentiment known as self-respect comes almost wholly of their surroundings. What do they know of the compensations in reserve for a life of virtuous sacrifice and toil, or how it is that a high moral sense and style of thought can elevate above the materialities of circumstance? The sum, as well as the end of life, to them seems to be

"To live, just to exist; to breathe, and be
A part of all the wondrous things they see."

Thus they feel worthy of what they have, just that, no more. So if what they look at, touch, taste, possess, be mean or wanting in fitness for the uses of the three-fold person, it must thereby be debased. Is it conceivable that any elevation of this moral sentiment, as flowing from an idea of the uses of life and the worth of being, could result from associating them with

"A bed of straw,
A crust of bread—and rags!
A shattered roof, a naked floor,
A table, a broken chair,
A wall so blank that shadows were thanked
For sometimes falling there!"

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As beauty and goodness, or *value*—which is a child's idea of goodness—are always inseparable in its thought, it follows that that the utensils with which children are served to food and drink, the beds upon which they sleep, the clothes they wear, the furniture and books they use, and above all, the nature upon which they look out—and which more than anything else determines the character of the infancy of their thoughts—should, so far as possible, be beautiful, that they may be esteemed valuable; and so go to the promotion of that feeling of self-worthiness that is essential to the elevation of the moral character. A whole volume of observations from life and experience which, in support of this view would be

"Confirmations strong
As proofs of Holy Writ,"

come up; but time forbids detail, or a further consideration of that upon which it would be well for us all to think.

A third moral advantage lies in the means it furnishes for innocent and delightful recreation. No one who has been a teacher, or at all observant of such demonstrations, can have failed to notice the difference in the effect which the announcement of noon-time, or recess, has upon different schools. From that one whose treeless, shrubless yard contains only the building, upon which has poured the red heats of the ascending day, and clouds of roadside dust, there will hurry an impatient crowd, every individual movement of which says plainly enough, "Anywhere but here!"

These are the half-baked, irritated little irresponsibles who go forth to vent the bad blood of our bad philosophy of education upon whatever comes in their way. And who wonders? It is a tendency, pretty nearly akin to a law of human nature, to desire to do to others—or to something—what is done unto us. They are tormented, so they torment each other—to say nothing of animals, birds and insects. They are deprived of the right to be comfortable, so do the best they can to make reprisal upon the rights and comforts of those about them. It is but a lower expression of the instinct of self-preservation. Thousands of children are sent, daily, out of heated, and

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otherwise wretchedly uncomfortable school-rooms, into playgrounds where there is nothing but a parched earth beneath a blistering sun. For the depraved dispositions they manifest, and the mischiefs into which they plunge, they are about as responsible as the mad dog which snaps at whatever crosses its path.

On the other hand, those who go out from the embowering shade of trees into grounds beautiful with trailing vines, and shrubs, and flowers, and tempting groves, pass as naturally into the indulgence of rational pastimes as the birds—food procured and nests prepared—to their carols amid the summer boughs.

"As the leaves of trees," says Irving, "are said to absorb all noxious qualities of the air, and breathe forth a purer atmosphere, so it seems to me as if they drew from us all sordid and angry passions, and breathed forth peace and philanthrophy." One whose song is full of that of which he sings, has written,

"Friendship with the flowers some noble thought begets;
Come forth and gather these sweet elves;
Come forth and gather them yourselves;
Learn of these gentle flowers whose worth is more than gold;—
Which not in solitude dwell,
But with each other keep society,
And with a simple piety,
Are ready to be woven into garlands for the good."

And again,

"Send the children up
To the high hill's top,
Or deep in the wood's recesses
To woo Spring's caresses;
Better men, hereafter,
Shall we have for laughter
Freely shouted to the woods, till all the echoes ring."

As a fourth moral advantage resulting from such embellishment, let us consider its influence upon the cultivation and refinement of taste, between which and morals there is so obvious a relation. * * * * *

A relish for the common beauties of nature is one of the safeguards of virtue implanted in the constitution of the soul.

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All we have to do is not to destroy it by separating it from the sources of this enjoyment, but, by constant cultivation of a pure taste, keep the child in such an attitude towards nature that,

> "The meanest flow'ret of the vale,
> The simplest note that swells the gale,
> The common earth, the air, the skies,
> Shall be an opening paradise."

As a final consideration of the moral advantages growing out of such aids in the work of human development, is their influence in leading the thoughts, "through natue up to Nature's God." * * * Worship is the highest act of which the soul is capable—the only one in which the immortal throws off mortality and joins itself to its true center of a holy and changeless ideal. Has the All-wise Father given this power only to those who, through sins and repentance, have attained the experience and strength of years, denying it to those of whom Jesus said, "Of such is the kingdom of heaven"? Let those who doubt it go back to the time when there came a lull in the din of the day, and man and beast rested from labor; when, deep in the meadow grass, the dreamy eyes of childhood passed up from the pebbles, and the mosses, and the grasshoppers of the morning's wonder—beyond the river, and the wood, and the cloud—beyond the arched stillness of the summer noontide—beyond the blue embrazure where the azure of its own thoughts was lost in the infinitude of awe, to which the child-soul had ascended, it thought not how, and knew not where. Or to the time when, on the golden shafts of some spring morning, an April shower came sliding down, and left such strings of perals tangled amid the emerald and rose of opening leaf and flower, and such a sense of loveliness and joy thrilling the veins of the young worshipper, no longer now a child, with tasks, hopes, fears, but itself a lilly-bell, a jewelled spray, a sunbeam, butterfly, or bird.

If the thoughts of children are not very early turned in the direction of all that is lofty in emotion, and "of good report"

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in practice, it will be because the most obvious duty, and the easiest part of the work of education has been neglected.

Its constant invocation should be in harmony with that of the soul of Nature, saying to them,

"Come forth on Sundays;
Come forth on Mondays;
Come forth on any day;
Children, come forth to play;—
Worship the God of Nature in your childhood;
    Worship Him at your task, with best endeavor;
Worship Him in your sports;
    Worship Him ever;
Worship Him in the wildwood;
Worship Him amidst the flowers;
In the greenwood bowers;
Pluck the violets blue;
Ah, pluck not a few;
Pluck the buttercups, and raise
Your voices in His praise!"

And now there is more to say than in the beginning; for these words are but suggestions of what could be urged in favor of the horticultural embellishment of school-house grounds.

When Charles Lamb was asked by a friend what sign or advertisement he should put up over the place where he was about to open a school for juveniles, the answer was, "Murder of the Innocents." As with reluctant pen and heart the demand for brevity is yielded to the passing hour, these words come up with a significance that almost compels the expression of things yet unsaid, to plead in this behalf. For though, in the half century that has elapsed since "Murder of the Innocents" might well have been written over schools opened in the babel of London streets, the school-houses of our country have come to be its crowning glory, I yet remember that even here there are thousands of them upon the marge of desolate swamps or on barren hill-sides, to which these words of fearful import were not inapplicable.

But I also recall those glowing lines where the enthusiast of a visioned future exclaims,

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"Schools for the culture of the beautiful
Shall yet abound in cities; every stone
Be curved and moulded by an ethic law;
And every marble in its outline tell
That now that Beauty works through man, which once
Worked independent of him, and evolved
The sculptures of the mountains and the stars."

And remembering that the true poet is also a prophet, I look with confidence to the time when, not in cities only, but in every town, and village and hamlet all over our great and prosperous land, every school-house shall be environed by a Temple of Nature for the culture of the beautiful—a Beauty which, in the development of every rosy limb of the body, each faculty of the mind, and all the emotions of the heart, shall be the work of education, each according to its own sacred laws.

THE SAPSUCKER.

BY DR. P. R. HOY, OF RACINE.

DR. HOYT: I respond to your call by furnishing the following article, the substance of which was communicated to the Wisconsin Nat. History Society. It is at your service, with the belief that it embodies facts that add something to the stock of useful knowledge:

There is a singular want of agreement in the statements of writers, especially in the Agricultural Journals, in respect to the SAPSUCKER. One says the Sapsucker molests trees only that are infested by worms—that the worms are what it is after, and nothing more. Another, that the Sapsuckers are not

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in quest of worms but the vital juice of the tree—that they suck the sap of fruit trees and so on. These articles indicate the lack of close observation—of something definite by which we can determine what species of bird they refer to; for all of the spotted Woodpeckers, and even including the Nut-hatcher, are by many indiscriminately called Sapsuckers.

A term so indefinitely applied should either be dropped or restricted to one species, the yellow-bellied Woodpecker, which not only sucks the sap, but eats the inner bark (liber,) of various ornamental, fruit, and forest trees.

Description.—The YELLOW-BELLIED WOODPECKER, (*Picus varius* of Naturalists,) is in length 8½ inches; expanse of wings 15 inches. The whole crown and throat is a rich, deep scarlet red, bordered with black. From the nostrils there is a white stripe running down the sides of the neck, curving slightly around the breast, which has a black spot in the centre. Wings black, with an oval spot of white; the primaries tipped and spotted with the same. Rump white, bordered with black; belly yellow; back dusky yellowish, waved and spotted with white.

The female marked nearly as the male, but wants the scarlet throat, which is whitish.

The young in October have the red mixed and mottled with brown.

The tongue of this species is quite unlike that of any other of our Woodpeckers; the horny tip is very much larger than in any other species, of the same size, with which I am acquainted; the point is rounded, unlike the sharp, lancet-like tip of the Downy, and Hairy Woodpecker, so well fitted to explore for those worms that burrow in trees. The tongue is short and stout, admirably adapted for scooping out the inner bark and viscid cambium, (the jelly-like substance which is to form the new growth, situated between the wood and bark,) on which it subsists.

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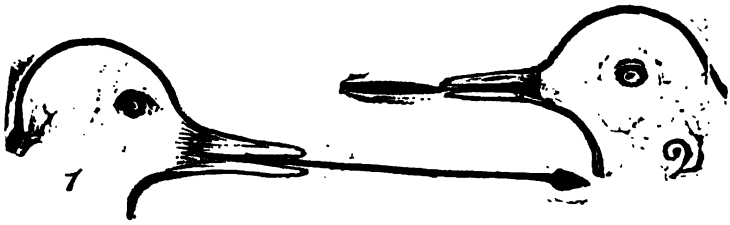

The outline cut will explain the difference between the tongues of the Hairy Woodpecker, figure 1, and that of the Yellow-bellied species, figure 2; the two birds being nearly of the same size, the tongues are represented as being thrust out to their full length. In vastly the majority of Yellow-bellied Woodpeckers the tongue is not capable of being extended more than from one-half to three-fourths of an inch beyond the beak; while in other species the tongue can be protuded from two to four inches. The stomach, or gizzard, is large and muscular. There are other anatomical peculiarities, all, however, fitting it to procure and digest the bark on which it mostly lives.

Prof. Spencer F. Baird, of the Smithsonian Institute, has recently constructed the new genus *Sphyrapicus*, of which *Picus varius* is constituted the type; a wise disposition, doubtless, for in habit and voice, as well as anatomically considered, this species differs widely from all other of the so called spotted Woodpeckers.

The Yellow-bellied Woodpecker is found throughout North America, east of the Rocky Mountains; north-west of the great lakes it is the most numerous species. They make their appearance at Racine, Wis., suddenly in large numbers after a warm night, about the 15th of April; for, like many other birds, Woodpeckers migrate only during the night. Then comes "prime *boy-time;*" armed with bow and arrow, cross-bows, guns, pistols and stones, all sorts and sizes hurry to wage war against the "*Sapsucker;*" and so eager is the pursuit that it is sometimes difficult to determine which do the greater damage for the time, the boys or the birds. The Sap-

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suckers time is now divided between playing *bo-peep* with the boys, and gouging out the tender bark of various trees; maple, cherry, peach, plum, apple, pear, mountain ash, poplar, pine, spruce, in fact almost every species of tree suffers more or less. The holes are made on the trunk and large branches, usually in a line running around the tree or branch, so as to girdle it with a row of punctures. These are from one-sixth to one-half an inch in diameter, and placed so close that there is only a narrow septum between, not sufficient, many times, to keep up the circulation and in consequence the tree dies; a result that occurs more frequently from wounds thus made in the summer and fall, when the divisions are more liable to dry, than during the spring when the active forces of vegetable life more readily repair the injury. There is not an orchard or garden of any size in this vicinity, that does not number trees killed outright by these sapsucking Woodpeckers. All go further North by the 5th of May, except such as remain to nest in the adjacent woods. While in the forest they feed on the bark of the wild cherry, iron wood, basswood, and white oak, but continue to visit neighboring orchards for a more dainty meal, as they prefer thrifty cultivated trees. By the middle of September the young appear in the orchards and gouge the trees on their own hook; they retire South by the first of November. A silent bird, especially when sucking their food, an occasional *kewee, keweeah,* uttered in a minor key, is all the note they have.

I have shot and dissected many at at all seasons, and in every case bark was found in the stomach, and in a majority of instances nothing but bark and a few gravel stones, a substance not met with in other species of Woodpeckers. When insects were found they proved to be *ants* and small *beetles;* in no instance have I found the larva of the *borers* or *elators,* which constitute so large a share of the diet of the Hairy and Downy Woodpecker.

Several years since these facts were communicated to Prof. Joseph Leida, of Philadelphia, who requested me to forward specimens in alcohol, "as my statements were highly inter-

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esting, being new to Science." In compliance, I shot a specimen while he was engaged in breakfasting on a Silver-leafed Poplar; I also chipped out that portion of the tree on which he was operating at the time. In answer, Prof. Leida stated that his dissections confirmed my statements in every particular.

I have described the migration as occurring at Racine, which will answer equally well for most localities in the North-west, with the exception of numbers, for it is an interesting fact that for physical reasons elsewhere explained, birds are met in greater variety, and in larger numbers, during their migrations, at this point than in any other place, perhaps, in North America. A statement amply proved by the large number of species in my cabinet, collected within ten miles of Racine.

Downy Woodpecker—(*Picus pubescens.*)

This second species is in rather bad repute for its sapsucking propensity. It is more commonly called the *Little Sapsucker*, in contradistinction to the Hairy Woodpecker (*Picus villosus*), which it closely resembles in everything except size; even the same *plick, plick, plip*, is repeated, only in a more feeble voice.

The Downy Woodpecker is only 6½ inches in length, and 12 inches in expanse of wings. Color, black and white, spotted and streaked; the male has a small red spot on the back of the head; female similar, without the red.

This little hardy species, together with the larger Hairy Woodpecker, remain with us during the entire year.

The habits of this industrious, cheerful bird, have been severely commented upon by many; but I am of the opinion it has been made, unjustly, to answer for the sins of the Yellow-bellied species. That the Downy Woodpecker does, during early spring, tap the maple for the purpose of slaking its thirst, I have had occular demonstration; and that it makes many small punctures in certain sweet apple-trees, for which it pays rather frequent visits to the orchard, I have but little doubt; yet I *do know* that I have shot and dissected very

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many with the object of ascertaining the contents of the stomach, and in no case have I found vegetable matter; but in all instances I have found abundant evidence that the bird has been engaged in a good work—in destroying the larvæ of the *borer* and *elators*, that do so much injury to our fruit and ornamental trees.

There is one valuable office to which, so far as I can learn, this species alone is engaged in; that is the destruction of the pupa of the various species of Atacus, (the native silk-worm moths,) thereby keeping in check and preventing the undue multiplication of the large, voracious larvæ of these splendid insects.

Prof. J. P. Kirtland, in his report on the Zoology of Ohio, condemns the Downy Woodpecker for mischief-doing, and invokes that extermination I would call down on the *Picus varius*, and for similar reasons. But I must believe that the Professor has inspected the work of the Yellow-bellied Woodpecker, and charged the innocent with the damage. With all the evidence I have collected, in the fourteen years my attention has been directed to the Woodpeckers, with the view of deciding this very matter, I would not dare recommend the destruction of the Downy Woodpecker; but, instead, I would commend this bird to the kind protection of the Horticulturist, believing it to be to his best interest so to do.

Yours truly,

P. R. Hoy.

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THE SAPSUCKER (*Picus varius*).

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INDUSTRIAL EDUCATION.

From an Address on "Special Educational Needs of the American People," delivered before the National Teachers' Association, at Buffalo, New York, August 10th, 1860.

BY J. W. HOYT, MADISON.

* * * * * * *

There is a certain rudimentary education which must be common to all, whether American or Italian, President or simple citizen — that knowledge of the instruments wherewith a further knowledge and discipline may be acquired. Nay, I have already admitted that this common necessity extends still further—that the science of language, of numbers, of natural phenomena and of man are universally essential. Still, since a knowledge of these in their present condition is but a part of the education of a people, it is evident that that education, even in its lowest grades, must be subject to modifications growing out of national peculiarities.

There never was a country favored like ours! What a history! bespangled all over with the brightest names e'er writ upon the page of time. A history so fresh and modern, too, that some of the heroes of its brightest period still linger among us—thus joining hands with the dark, tempestuous past, and the mighty, working present. Yea, we are ourselves witnesses of a most marvellous national growth—of cities founded, grown populous, and filled with the countless monuments of almost perfected art—of mighty States, sprung up, as by magic, upon the virgin soil our fathers, nay, ourselves, were the first to cultivate, and numbering their citizens by millions—of a vast Republic, wider than the ambitious Alexander ever dreamed of, and provided with unequaled elements of growth and power.

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We behold a people, too, that is the "child of its own achievements"—colossal, glorious, sublime—a halo around its brow!

> "America! half-brother of the world!
> Time hath no other child like thee!"

While the nations of the earth are in uproar and confusion; while sceptre clashes with sceptre, and "desolation, snatching feom the hand of Time the scythe of ruin, sits aloft or stalks in dreadful majesty abroad," see how this young Titan sits upon his throne between the seas, nor fears the howling tempest!

Viewing the general condition of our country more closely, in order to discover its special educational needs, three great classes of conditions or characteristics appear, to wit: the Physical Character of the Country, the Characteristics of the People, and the Form of the Government.

1. Of the physical character and condition of the country:

I am aware that it is popular now-a-days to ascribe all that we have, as a people of wealth and power and glory, to the transcendant genius and irresistible energy of the Anglo Saxon race. But, while I do not question the superiority of this race; while I believe, indeed, that it was a part of God's providence, this blending or fusing of the elements of which it is composed—made up, as you know it is, of the Angle, the Norman, the Saxon and the Dane—so that a race might be produced whose mighty arm and working brain should subdue the forces of nature, and people the earth with its nobler millions, I do not believe that this is the only element of American success: there is a geographical as well as ethnological cause.

The United States comprise a portion of the earth abounding more than any other in all the natural sources of wealth and power. Occupying the best portion of the North-Temperate Zone, it is at once the most congenial to human life, and the most productive of human happiness. With its coast of 12,000 miles; its lofty but not impassible mountains; its broad valleys and boundless prairies; with its vast interior

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seas and majestic rivers; with its forests of all woods, and its mines of all metals, what country is there like it on the globe! No, race is not all. If God had planted the Anglo-Saxon upon Mexican or South American soil, not ours would be the countless ships that proudly bear the Stripes and Stars to foreign climes, and the products of our fertile fields to every people on the globe—not ours the countless palaces that float upon our lakes and rivers — not ours the iron bands that web the continent, and wed the stranger oceans that else had never heard each other's voice—not ours the boundless West, whose mighty lap so loves to hold the diverse multitudes that come from other shores.

The natural wealth of this great continent cannot be overestimated. The artificial wealth derivable therefrom, imagination staggers under the attempt to conceive it. No other people in all history have had such an inheritance.

2. But the character of our population is also peculiar.

We are the most composite people on the earth. England is peopled almost wholly by Anglo-Saxons, France by Gallo-Romans and Franks, Russia by Moguls and Sclavonians, and so on; but in America, although the predominant element is Anglo-Saxon, the whole people are a most remarkable mosaic of all "peoples and kindreds and tongues." In the progress of time, this rich mosaic will have been ground to powder by the attritional forces of active business and social intercourse, and its atoms cemented into one homogeneous jewel. Then shall we have the complete Ideal Race. Even now this work of blending the races has fairly begun; and if Ehrenberg were to examine the blood in our veins, it would puzzle him not a little to determine which was the Anglic, which the Teutonic, the Celtic, the Scandinavian, or Slavonian drop! This is the most significant fact of American Civilization.

See what has already come of it — what million-handed industry—what cities and villages and rural homes—what manufactories—what railroads and telegraphs—what commerce—what literature, churches and schools!

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Specially considered, the American is characterized, 'First, by a strong love of individual freedom and independent action. He acknowledges no master among men, and will brook no sort of control. Liberty is a sacred flame which he cherishes (for himself) with all the watchful care of the Roman Virgins.

His second characteristic is a desire to create. He is not content with the old, but will have something new—instrument, machine, useful chemical compound, philosophic theory, institution. His inventive genius added to the power of steam, and electro-magnetism is performing miracles every day, such as would have passed in early times for interpositions of Providence. The U. S. Patent Office is the greatest curiosity shop in the world, and every day adds some new wonder to the countless symbols of American skill. His faith, too, in the power of his genius is immense. To him it is not at all incredible that God should have made the world out of nothing: he almost thinks he could do it himself! and rather wonders that *six whole days* should have been occupied in the work! Agriculture, Mechanic Arts, Commerce—what rapid growths are they not making under the administration of his newly stimulated creative genius and energy. Let him go on, adding triumph to triumph, until the whole race shall have been redeemed from drudging toil: there is nothing for which he does not hope, scarcely anything which he may not perform.

His third characteristic is a strong, irrepressible desire to know. There is no law of the material universe that he does not hope to discover, no mystery of the spiritual world which he does not resolve to fathom. There is no truth too sacred for him to know. He is sure there is some golden highway of life, and searches for the hidden paths thereto with never-ceasing diligence.

Fourthly, he is distinguished by a love of authority and possession. The former is tempered by his love of independence, the latter by a strong sense of justice; both, however, are active and powerful, and would be dangerous elements without the restraining influences of a genuine Christianity. As it is they are controlled with difficulty, and are, to my

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mind, an occasion of great solicitude. Grand and glorious, if wisely directed, they must lead to the irretrievable ruin of the individual and nation, if debased in their objects.

Fifthly, the American is characterized by an unparalelled activity and energy. Restless as the forces of nature, he also has an intensity of will that makes him almost irresistable. Within the little more than two hundred years, since

> "A band of exiles moored their bark
> On the wild New England shore,"

what a mighty work he has wrought! a work that baffles description and challenges the admiration of the world.

Such, in brief, are the leading characteristics of the people of this country, requiring careful consideration from an educational stand-point.

3. Let us now, in the third place, look to the mould of our institutions.

The Government, in view of the country, and the peculiarities of the people, could hardly be other than a Democratic Republic—a government of the whole people, by the whole people, for the whole people. And such it is, in theory at least, with manifest destiny on the side of improvement.

See how the system of government, created and kept alive by such elements as I have named, itself fosters and develops them in turn. The love of independent action and individual freedom is strengthened by the frequent exercise of the right of sovereignty. The individual feels himself equal to any and as good as the whole, for nothing could be done without him! Each man helps to make the President, and himself hopes to be one. The government also protects every free white man in the enjoyment of his natural rights, declaring them "inalienable," and using, if need be, its whole power to preserve them inviolate.

The desire to create is stimulated by large pecuniary advantage and the offered wreath of fame. In no country in the world is the Inventive Genius so much of a hero.

The desire to know is fostered by an increased necessity for knowledge, and the high estimate put upon it.

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Love of authority is cherished by giving to every fourth man an office; and love of possession by the opportunity afforded every man of acquiring much property with small means. There is *land* enough, and

"Uncle Sam is rich enough
To give us all a farm!"

Activity and energy are also stimulated by the unbounded advantage, pecuniary, social and political, which may come of their exercise.

Here, then, we have the whole country in full view before us—its physical condition, its people, its government. But we are not yet prepared to properly appreciate the educational demands of the age and race, until we have first glanced at the relation we sustain to other countries.

I remember being struck, when a boy, with the remarkable smallness and paucity of the light spots on the social chart of the world. And so to-day the spectacle of the nations is a sad one. Still, it may be well for us to dwell for a moment upon the great pagan world, with its large proportion of the human race still sitting in the darkness of superstition and idolatry—upon the barbaric tribes of Southern Asia, North Africa, and the half-civilized millions of China, Japan and South America—upon the millions also, of so-called civilized Europe; the blind, sensuous followers of the Prophet; the ignorant, priest-ridden multitudes of Portugal, Spain and Italy—the two former stagnant and even in process of decay; the last named, though itself only a remnant of a decayed nation, and scarcely less degraded in its condition, yet more hopeful than they, and just now renewing her oft-repeated struggle for a more worthy existence, under the lead of the noble patriot Garibaldi (whom may God help!)—upon the millions of serfs that toil in Russian fields; the isolated and rude inhabitants of the frigid north; and even the poor toil-oppressed, uneducated multitudes of enlightened Germany, France and England.

Are they not a mournful subject for contemplation—these hundreds of poor, groping, stumbling, decrepit peoples that

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nave made up this long, dark panorama? And yet they are the races and nationalities, in the midst of which we have been placed, by God; ourselves a new race, with a new and sublime work to do, and endowed with unparalelled powers and instrumentalities for its accomplishment.

To my mind, nothing is plainer than that it is the destiny of America to lead in the civilization of the world—that it is her sublime mission to teach and maintain the right of every human being to himself, and to the highest devolopment of which he is capable, and to be herself an example of that true and sublime elevation of government and people which should be the aim of every nation.

I cannot believe that Providence hid away in the bosom of old ocean this vast continent for ages, keeping it, as it were, a precious gem for the adornment and use of a chosen people, without the intent to make it and the people who should come to possess it, a mighty instrumentality for the redemption of the race from the old reign of error and its enslavement to the material world. This planet of ours, framed with such wisdom and skill, so beautifully fashioned and wonderfully furnished—a work so glorious, that, when it was complete, "the morning stars sang together, and the sons of God shouted for joy"—the Creator did not design it as a stage, whereon the tragedy of human life as it has been, should be played and repeated forever.

Gradual development is the law of man, as well as of Nature and the Universe, and he could probably only attain to the highest excellence by enduring the pangs of successive births. First an animal, then a man; this was the law.

Ever since the race began its struggles, individual men have been born who were representatives of the race that was to be—heralds of the "good time coming;" but the great majority of mankind have lived and died like the beasts of the field. As did the Children of Israel, after wandering for forty years in the wilderness, die at last without the sight of Canaan, so have the whole human race been wandering we know not how long, without even an approximate realization of the true

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destiny of man. Is not our American Civilization the Pisgah of the world's wilderness, from whose summit the strong-visioned philanthropist may dimly descry the more glorious future. For a realization of that future our country, our people, and the principles of our government conspire; and somewhere and somewhen the result will be attained.

In view of all these general considerations, I think it must be evident that we do need a style and system of education of a peculiar character; and the question next arises, what should be the character of that education?

In answer to this direct interrogatory, let me say, *In the first place, our people must be made acquainted with Nature.*

I know that there are those, who having pre-judged the Sciences, distinctly so called, and pronounced them guilty of a *gross materialism*, will charge me with having a sordid philosophy. Let them not judge hastily: I too am a worshipper at the shrine of the Spiritual. But I cannot forget the stern material necessities of man. My heart grows weary with the weight of drudging toil that fills the world. I can hardly endure it that nine-tenths of all the time of mortals should be spent in the struggle to keep up the walls of this decaying body, while only the bits and ends of time are left for the culture of the soul. Aye, I long for the time so clearly omened by the numberless applications of steam-power and electric agency, when man will have subdued the elements to his authority and gained a complete mastery over the mighty forces of Nature. This is the destiny of the race—this the mission of our people.

Unless our millions of acres of land, with its soils full of all possible fabrics and foods—our grand old forests of timber—our widely distributed, inexhaustible mines of coal, and lead, and iron, and copper, and silver, and gold—our increasing millions of people of unparalleled activity, energy and genius—unless the sciences, which, in their rapid advancement, are almost daily startling mankind with new revelations, and making him king who else had been slave,—unless all these eloquent prophecies are a mockery of our heaven-born hopes, then is it

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true that God is beginning to lift from off the drudging world that severity of toil whose inevitable effect is to paralyze the intellect and benumb the power of emotion. *Labor* there must be—labor of hand and brain; for this was the law ordained for man—labor of the hand for the brain, and of the brain for the hand. It must not be exclusively of the one or the other kind. *I repeat it, the first great business of the race is to free itself from enslavement to bodily needs;* and America must lead the way.

Already not a little has been accomplished in this direction. Compare the machinery and the processes in our manufactories of to-day with those of one hundred years ago—machinery for the cording, spinning, weaving and coloring of fabrics of every description—machinery for making nails, pins, knives, and every variety of hardware—for cabinet-ware, wagon-work and every kind of work in wood—machinery for the numberless operations of Agriculture; steam-plows, harrows and diggers, planters, cultivators and reapers, threshers, winnowers and grinders—machinery for locomotion on land and sea, for flying in the air, and for whispering around the globe in a moment! There, too, are the processes of Chemistry yet more wonderful, numberless and useful.

But all these incalculable advances in the great work of lightening the toil, and multiplying the powers of man are the products of a better acquaintance with nature. And yet who believes that we have more than made a beginning? The science of the present is made up of partial facts and fragmentary truths; phenomena which to us are an enigma, in the better future of mastered generalizations will astonish our children with their simplicity.

"Subdue the earth!"—there is more in that first command of the Almighty than has yet "been dreamt of in our philosophy."

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ADDITIONS TO THE FLORA OF WISCONSIN.

BY T. J. HALE.

DEAR SIR: — The following catalogue comprises the plants added to the Flora of Wisconsin during the last two years. Its extent shows clearly the incompleteness of the enumeration thus far published. The labor of collecting and studying Wisconsin plants has been left exclusively to amateurs, and so long as this is the case, the botany of the more uninhabited parts of the State must remain very imperfectly known. It is to be hoped that educational institutions will become more interested in making local collections. Even with such aid, many years must elapse before the enumeration for the State approaches completeness. Thus far no college or school in the State has taken interest in the subject of botany further than to teach the elements of the science, and this to a limited extent only.

Yours, very respectfully,

T. J. HALE.

PROF. J. W. HOYT, *Sec. State Agrl. Society.*

CATALOGUE.

ANEMONE Caroliniana, Walt. Kankakee, Ill., may occur in Wisconsin.

ARGEMONE *Mexicana*, L. LaCrosse.

NASTURTIUM sessiliflorum, Nutt. Common on the banks of the Mississippi, from Dubuque to Lake Pepin.

obtusum, Nutt. Same range, but less common.

SISYMBRIUM officinale, L. Very common.

DRABA arabizans, Michx., Fond Du Lac County.

LEPIDIUM intermedium, Gray. Very common.

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VIOLA delphinifolia, Nutt. Common. Noticed by *Dr. Lilly*, of Fond du Lac, *Mr. Watson* and others.

striata, Ait. Oakfield, Fond du Lac County.

pubescens, Ait.

var. eriocarpa, Nutt. Common.

HYPERICUM *Perforatum*, L. Rock Prairie, where it is likely to become a pest, and at Prairie du Chien.

corymbosum, Muhl. Not common southward, but frequent northward. Noticed by *Mr. S. H. Watson.*

ellipticum, Hook. Black River Falls.

mutilum, L. Black River Falls.

SAPONARIA officinalis, L. Everywhere escaping from gardens. *S. H. Watson.*

SILENE *Armeria*, L. Same places.

CERASTIUM arvense, L. Black River.

HIBISCUS *Trionum*, L. Beloit, Ft. Atkinson, and elsewhere.

LINUM Boottii, Planchon. Not rare.

RHUS aromatica, Ait. Potosi.

RHAMNUS lanceolatus, Pursh. Dubuque, Iowa, *Dr. Asa Horr.*

TRIFOLIUM *arvense*, L. White Oak Spring.

stoloniferum, Muhl. Dubuque. *Dr. Asa Horr.*

PSORALEA argophylla, Pursh. St. Croix County, and common in Minnesota as far south as the Iowa line.

PETALOSTEMON villosum, Nutt. Lake Pepin, St. Croix County and westward.

ASTRAGALUS caryocarpus, Ker. Sandy "mounds" of Pierce and St. Croix Counties and westward.

DESMODIUM cuspidatum, Torr. & Gray, Chippewa River.

Dillenii, Darlingt. Waukesha, *M. S. Griswold.*

LESPEDEZA, procumbens, Michx. Potosi and elsewhere; not rare.

capitata, Mich.

var. angustifolia, Gray. Westward in dry calcareous soils.

PHASEOLUS diversifolius, Pers. Sandy banks of the western rivers: Dubuque to St. Anthony's Falls.

P. pauciflorus, Benth. Same range.

GLYCYRRHIZA lepidota, Bess. Lake Pepin, northward and westward.

GEUM album, Gmelin. Abounds.

CRATEGUS tomentosa, L. Common.

AMALANCHIER Canadensis, Torr & Gray.

var. Botryapium, Gr. Common.

var. oblongifolia, Gr. Dunkirk, *S. H. Watson*, and elsewhere, but more common northward.

EPILOBIUM molle, Torr. St. Croix County, and probably common northward in swamps.

ŒNOTHERA serrulata, Nutt. Lake Pepin and north-westward.

rhombipetala, Nutt. Common in sandy places westward.

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HYPOBRICHIA Nuttallii, Curtis. Le Roy, Minn.; also near the mouth of Black River without fruit or flowers.

OPUNTIA Rafinesquii, Engelm. Baraboo.

fragilis,——? Baraboo.

HEUCHERA hispida, Pursh. Common.

DAUCUS *Carota*, L. Not rare.

LIATRIS punctata, Hook. St. Croix County and westward where it is abundant.

EUPATORIUM serotinum, Michx. Potosi.

ASTER Tradescanti, L. Common.

simplex, Willd. Very common.

puniceus, L.

var. vimineus, Torr & Gray. Dunkirk, *S. H. Watson*: and elsewhere; rare.

SOLIDAGO serotina, Ait. Common along the large western rivers.

AMBROSIA psilostachya, DC. Common in sand along western rivers.

CYCLACHŒNA xanthiifolia, Torr & Gray. Hudson Wis., and westward; very abundant at St. Paul and St. Anthony, where it appears as if introduced.

HELIANTHUS grosseserratus, Martens. Very common.

doronicoides, Lam. Common in damp, rich soil, particularly along streams.

DYSODIA chrysanthemoides, Lag. Franklin (Highland), and near Dunleith.

TANACETUM *vulgare*, L. Frequent.

ARTEMISIA Ludoviciana, Nutt.

var. gnaphaloides, Gr. Common.

Absinthum L. Along the Wisconsin river from Portage to the mouth.

frigida, Willd. Lake Pepin to St. Anthony's Falls.

SENECIO palustris, Hook. Madison; also St. Anthony's Falls, Minnesota.

SONCHUS *asper*, Vill. Common.

VACCINIUM Oxycoccus, L. Lake Mills and elsewhere, but not common.

cæspitosum, Michx. Kilbourn City.

vaccilans, Solander. Kilbourn City.

ANDROSACE occidentalis, Pursh. Baraboo Bluffs.

LYSIMACHIA lanceclata, Walt.

var. hybrida, Gray. Common north-westward.

var. angustifolia, Gray. Not rare in low grounds.

APHYLLON fasciculatum, Torr & Gray. Mazomanie, *S. H. Watson*.

PENTSTEMON grandiflorus, Fraser. Sand-banks from Dubuque to St. Anthony.

ILYSANTHUS gratioloides, Benth. Madison, *S. H. Watson*. Common elsewhere.

VERONICA Americana, Schweinitz. Chippewa River.

arvensis, L. Dunkirk, *M. S. Griswold*; also Janesville and Waukesha.

SEYMERIA, macrophylla, Nutt. Potosi.

GERARDIA aspera, Dougl. St. Croix Co.

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DIPTERACANTHUS ciliosus, Nees. Beloit.
LIPPIA lanceolata, Michx. Dubuque.
CALAMINTHA glabella, Benth.
var. Nuttallii, Gray. Racine.
HEDEOMA hispida, Pursh. Sauk Co. and northward and westward.
BLEPHILIA hirsuta, Benth. Waukesha, *M. S. Griswold*; also abundant northward and westward along streams.
DRACOCEPHALUM parviflorum, Nutt. St. Croix Co.
Moldarricum, L. Hudson and St. Croix Falls.
ELLISIA Nyctelea, L. Beloit.
CUSCUTA tenuiflora, Engelm. Along western streams.
PHYSALIS angulata, L.
var. Philadelphica, Gray. Black River.
pubescens, L. Chippewa River.
GENTIANA alba, Muhl. Not rare westward.
puberula, Michx. Common.
ASCLEPIAS Sullivantii, Engelm. Dane Co., *S. H. Watson.*
OXYBAPHUS hirsutus, Hook. Sandy banks, westward.
nyctagineus, Sweet. Common along western rivers.
CHENOPODIUM *glaucum*, L. Kenosha.
ambrosioides, L. Beloit.
FRŒLICHIA Floridana, Moquin. Sandy banks of western rivers; not rare.
POLYGONUM nodosum, Pers.
var. incarnatum, Gray. Common.
ramosissimum, Michx. Along the Mississippi river.
RUMEX altissimus, Wood. Common.
obtusifolia, L. Madison, *S. H. Watson.*
CERATOPHYLUM demersum, L. Common.
EUPHORBIA cyathophora, Jacq. Dubuque to St. Anthony's Falls, on sandy banks and bluffs.
commutata Engelm. Beloit.
serpyllifolia, Pers., E. inequilatera, Engelm.
URTICA gracilis, Ait. Very common.
BŒHMERIA cylindrica, Willd. Dunkirk, *S. H. Watson;* also Burlington and St. Croix River.
CARYA amara, Nutt. Fond du Lac, *Dr. Lilly.* Also along the Mississippi river.
QUERCUS Castanea, Willd. Janesville and on the Mississippi river below La Crosse.
tinctoria, Bartram. Common.
BETULA nigra L. Along western rivers.
lenta, L. Sauk County.
ALNUS incana, Willd. Common.
SALIX cordata, Muhl. Common.
var. myricoides, Gray. Madison.
petiolaris, Smith, Madison.
nigra, Marshall. Common.

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SPARGANIUM eurycarpum, Engelm. Common.
simplex, Hudson. Dane Co. *S. H. Watson*, also common northward.
angustifolium, Michx. Dane Co. *S. H. Watson*. Same range.
ZANNICHELLIA palustris, L. Madison and Racine.
POTAMOGETON pusillus, L. St. Croix Co.
lucens, L.
var ? fluitans, Gray. Wauzeka.
SAGITTARIA calycina, Engelm. Prairie du Chien.
GYMNADENIA tridentata, Lindl. Kilbourn City and northward, common.
JUNCUS paradoxus, E. Meyer. Common.
debilis, Gray. Common northward.
bulbosus, L. Kenosha.
bufonius, L. Kenosha.
SCHOLLERA graminea, Willd. Common along rivers.
CYPERUS diandrus, Torr.
var. castaneus, Torr. St. Croix Co.
strigosus, L. Common.
ELEOCHARIS intermedia, Schultes. Waukesha.
SCIRPUS Torreyi, Olney. Dane Co. *S. H. Watson;* also northward where it is common.
debilis, Pursh. Dane Co., *S. H. Watson;* also northward.
RHYNCHOSPORA alba, Vahl. Dane Co., *S. H. Watson;* also northward.
CAREX Backii, Boott. Blue Mounds.
vulpina, L. Madison.
stellulata, Good.
var. scirpoides, Carey. Common.
sychnocephala, Carey. St. Croix Co.
arida, Schw. & Torr. Along western rivers.
festucacea, Schk.
var. tenera, Carey. Sauk Co.
platyphylla, Carey. Madison.
tentaculata, Muhl. Madison.
squarrosa, L. Along western rivers.
cylindrica, Schw. Same range.
LEERSIA lenticularis, Michx. Same range.
VILFA aspera, Beauv. Sandy banks of the Mississippi, from Dubuque to St. Paul.
MUHLENBERGIA sobolifera, Gray. Common westward.
CALAMAGROSTIS longifolia, Hook. Sandy banks of the Mississippi.
STIPA spartea, Trin. Common.
ARISTIDA purpurascens, Poir. St. Croix Co.
BOUTELOUA oligostachya, Torr. St. Croix Co.
DACTYLIS glomerata, L. Madison, *S. H. Watson.*
EATONIA Pennsylvanica, Gray. Common.
ERAGROSTIS Frankii, Meyer. Common.
capillaris, Nees. Potosi.

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Festuca elatior, L. Dubuque, *Dr. Asa Horr.*

Bromus Kalmii, Gray. Common.

Panicum pauciflorum, Gray. (Ell?) Common in the pineries.

Crus-galli, L.

var. *hispidum*, Gray. Not rare.

Asplenium angustifolium, Michx. Racine, *Dr. Hoy;* also Potosi.

Cheilanthes lanuginosa, Nutt? Dry rocks, bluffs of western rivers.

Selaginella selaginoides, Gray. Geneva.

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INDUSTRIAL RESOURCES AND CONDITION OF COUNTIES.

In pursuance of the general plan involved in the Report of the Executive Committee on the Natural Resources and Industrial Progress and Condition of the State, we addressed letters to prominent men in all the Counties, asking concise County Reports of the same general nature. A few responses came promptly; others were obtained only after repeated applications, and finally arrived so late as to require either their omission or the condensation of all; while several counties are not represented at all. The statement is due, therefore, to those gentlemen who have kindly furnished the Reports here published, that many of them were written on short notice; and to ourself, that the modifications which will be noticed in the case of some, have been made necessary by legislative limitations as to space.

In several instances, where estimates of the crops of 1860 have been rendered valueless by the statistical tables embraced in the Report of the Executive Committee, we have taken the liberty to either substitute statistics, or to omit the estimates altogether.

As published, these Reports will be found to contain much valuable information in small compass, and until the completion of the series of Agricultural Surveys just instituted by the Society, must be regarded, when taken in connection with the General Report of the Committee, as the most interesting and reliable records we have of the Industrial Capacity and Progress of Wisconsin.

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INDUSTRY OF ADAMS COUNTY.

BY ALBERT WOOD, OF QUINCY.

The County of Adams is generally rather level, except the south-west portion, which is quite hilly and heavily timbered. White, black and burr oak predominate. Soil, black, on a hard pan or clay sub-soil. On the Wisconsin river the timber is generally black and burr oak, and black pine, which is the prevailing growth in the county. The river bottoms, however, are very heavily timbered with white maple, white ash and bass-wood, and some white oaks

Except the first mentioned portion of the county, the soil is of a more sandy nature, with sandy sub-soil, clay sub-soil being to some extent interspersed. The surface has a few inches of black earth mixed with black sand, except on the hills, where it is all yellow sand; yet, with such seasons as the past, even that produces good wheat and corn; especially when it receives dressing, as I know by experience; but it will not stand dry weather, like clay sub-soil.

In the north-east portion of the county is what is called the Little Pinery, heavily timbered with large pines, around and between the marshes, which are quite extensive in that part of the county.

There are several steam mills for manufacturing lumber in the vicinity of the pines. The lumber is hauled to the river in the winter, and taken to market in the spring.

Whether the marshes will ever be brought into usefulness except for "marsh hay," (which is about the only kind used in this county) remains to be proved.

It is said the soil of the pine timber-land is good, but on account of the amount of labor required to prepare the land for crops, but little has yet been done in that direction. I think about one-twentieth of the land in the county is prairie, and about one-eighth waste land, marshes, &c. The balance is timbered land, as before described; and I think not more than one-fifteenth is under cultivation at present.

Stock is being raised to considerable extent, and some of

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the cattle are said to be of the best quality. The breed of horses is also improving. Mr. L. S. Carter, of Dell Prairie, informs us that he has some fine wool sheep, half-French Merino, shearing ten pounds per head. The breed of hogs is much improving, and more than sufficient pork is raised for home consumption.

There are five flouring mills in the county, five steam saw mills, and four saw mills propelled by water power. I am sorry I am not sufficiently posted to inform you of the amount of lumber cut, or grain ground by the above mentioned mills. Whether they pay or not I do not know.

I am well aware that Adams County abroad has a bad name, on account of being sandy. I admit there are spots which will not produce much, however well cultivated; but as a general rule, it only requires industry and perseverance, in most localities, for success; and with these prerequisites Adams County will average with most of the other counties in Wisconsin.

INDUSTRY OF BAD AX COUNTY.

BY B. C. BIERCE, OF VIROQUA.

The first settlers in Bad Ax County were Lumbermen, who erected their mills on the Kickapoo river, about 16 years ago. The oldest inhabitant of this county, in this line of business is, I believe, John Harrison, Esq. From 16 to 20 years, the Kickapoo river has been steadily running out its treasures of logs and lumber, and perhaps this winter (1860–61) sees as many loggers and lumbermen at work as any preceding year.

Farmers did not begin to come into this county much, until after 1846. Moses Decker, recently deceased, John Graham, Esq., Hon. T. J. Defreese and William C. McMichael are among the first permanent settlers of this class.

Bad Ax County was organized in the spring of 1851, under an Act of the Legislature of March 12th of that year, dividing

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the County of Crawford, and creating the counties of Bad Ax and La Crosse. It takes its name from the principal river within its boundaries, which empties into the Mississippi river.

The county contains 18 whole townships, three fractional townships on the Mississippi, and the northern half of three townships on its southern border; the line between this and Crawford County running through the middle of a range of towns.

The most of the county is covered with heavy timber, though there are within its limits four separate praries. The three principal rivers are the Kickapoo, which runs south through the county, and the Coon and Bad Ax, which run west of the ridge that divides the Kickapoo from the Mississippi, and which empty into the latter. These streams are well studded with saw and grist mills, and we have two springs running, one a saw mill and the other a grist mill.

The prairie soil in this county is the same as it is in the other counties of the State, and in most of the timbered land the soil is the same: but when we get upon the highest oak ridges, the soil is mostly clay. Our best wheat crops are raised on this soil. Our crop of wheat and oats for the last year is estimated by good judges at 1,000,000 bushels. [The statistical returns show an aggregate of 473,744½ bushels. —Ed.]

The agriculture of this county is destined soon to be of a high order. This can be seen from the improvements that are now being made. Does a farmer build a barn or dwelling house, he builds a good one; does a school district build a school house, it builds a good one. Great pains have been taken the last three years by many of our farmers to plant orchards of good, hardy fruit trees. Pears, grapes, plums and quinces have been planted. It remains yet to be seen whether they will pay expenses. I think they will.

This county is probably better adapted to sheep-raising than any other county in the West. While there is an abundance of clear spring water, the land is dry and rolling, making it

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healthy for all kinds of stock. Indeed, from its great number of large springs, the county should have been named Spring county. Then it could at least boast of a christian name. There is but one large flock of sheep in the county, that I know of; that flock is owned by Capt. Thomas Cade, of the town of Franklin. But I think more attention will be paid to this branch of industry hereafter, as there has been a woolen factory started just over the line of the county, in Crawford, thus bringing a wool market to the very doors of our farmers.

But little has been done in this county as yet in flax-raising. From what I have seen, however, I think heavy crops of superior flax could be raised here.

I am not aware that any of our farmers have made more butter or cheese than we wanted for family use. Wheat, oats and pork are the staple products.

We have no manufacturing establishments in this county, although we are well supplied with ordinary mechanics. This county should be one of the leading manufacturing counties in the State. Its water power is very extensive, almost every foot of soil is tillable, and it has timber enough to last for years. Its bass wood, oak, ash and pine are almost inexhaustible.

Our County Agricultural Society was organized in the fall of 1857. It has purchased ten acres for a Fair Ground three fourths of a mile west from Viroqua, which is enclosed by a good pine board fence. In consequence of this, the Society became somewhat involved in debt; but it is now nearly out of debt, and stands, I think, on a firm and permanent basis. At the Fair held last fall, there were seventy-four entries, and the whole amount of Premiums awarded was $64.25.

On the whole, we think the citizens of Bad Ax county may congratulate themselves on the progress they are making in Agriculture, Mechanic Arts, and in Education; and we think we have reasons for hoping that we shall ever sustain a respectable standing with our sister counties.

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INDUSTRY OF BROWN COUNTY.

BY HENRY S. BAIRD, OF GREEN BAY.

Brown County is one of the two oldest counties in the State. It was organized on the same day with its its twin sister, Crawford County, under an act of the Legislative Council of the Territory of Michigan, passed on the 16th of October, 1818. At the time of their organization, and until the year 1829, these two counties embraced the whole of the territory now forming the State of Wisconsin. Brown County included all that portion lying east of a line drawn due north from the northern boundary of Illinois, through the middle of the Portage between the Fox and Wisconsin Rivers, and consequently embraced the present counties of Renosha, Racine, Walworth, Rock, Milwaukee, Waukesha, Jefferson, Ozaukee, Washington, Dodge, Sheboygan, Fond du Lac, Manitowoc, Calumet, Winnebago, Kewaunee, Outagamie, Waupaca, Door, Oconto, Shawanaw, and parts of Green, Dane, Columbia, Marquette, Waushara and Portage.

The limits of Brown County have been decreased so that it now contains about sixteen Townships, or 576 square miles. The principal towns in the county are the City of Green Bay, and Borough of Depere, both of which were laid out and platted as Towns between the years 1830 and 1835. The former is located upon the east side of the Fox river, opposite the site of old Fort Howard, and about 1½ miles above its discharge into Green Bay. It possesses the best *natural harbor* north or west of Detroit; and the Fox river, which is about ¼ of a mile in width at this point, has sufficient depth of water for seven miles up from its outlet into the Bay, to Depere, to float the largest class of steamers and sail vessels navigating the Great Lakes. East river, which enters the Fox river on the east shore, directly opposite Fort Howard, and in the northern part of the town of Green Bay, is also a considerable stream, and navigable for large vessels for a mile above its mouth. The town is handsomely located, possesses a fine soil and a healthy and agreeable climate.

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Depere is situated on the same side of the Fox river, and about 5 miles above Green Bay: its site is high and commanding. As this point is the head of navigation for large steamers and sail craft, it is one of importance; it is here that the first dam and lock, a part of the Wisconsin and Fox River Improvement, are constructed. This dam has created a water power equal to any in the West; and at this place are erected several large and extensive manufacturing establishments—grist mills, saw mills, and lath and shingle mills. There is also a good Fishery, which yields annually several hundred barrels of fish, consisting of white fish, trout, pickerel, sturgeon, and every variety of the smaller kinds.

The original "settlement at Green Bay," extending from the outlet of Fox river, on both banks to Depere, is of much older date than the town of the same name. Green Bay was first visited and settled by the whites (Jesuits) in the year 1672, and is the oldest settlement in Wisconsin. It was established a Military Post by the Americans in 1816, and continued as such for about 35 years, but the fort is now evacuated.

The country embraced in Brown County is generally heavily timbered with beech, maple, oak, pine, ash, elm, birch and basswood; the surface is generally level, but not flat—gently undulating—and on the borders of the streams there are considerable patches of low prairie, serving for hay and pasture land. There is very little waste land or such as cannot be cultivated. The soil is generally of good quality, consisting of clay and black rich loam, and sand. Wheat (both spring and winter), oats, barley, corn and peas can be, and are, grown to profit and advantage. All parts, even the most broken and elevated, produce good crops of timothy, clover and other grasses; and vegetables of all varieties, that can be raised in any of the Northern or Middle States, are raised here in great abundance and perfection. All of the crops mentioned yield a full average in quantity and quality.

Fruits such as apples, plums, cherries, grapes, currants and all varieties of berries do well, and of late the attention of

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farmers and others has been attracted to the culture of the Orchard and the Nursery. The country abounds with a great variety of wild fruit—strawberries, raspberries, blackberries, whortleberries, plums, &c., &c.

This portion of Wisconsin, being well watered by numerous living springs and small streams, and possessing a large amount of natural meadows of rich grass, is well adapted to raising stock and for dairy purposes.

The character of rocks and stone is principally limestone, sandstone, and a species of granite; the former predominates. It is valuable for building, and produces the best and whitest quality of lime.

The principal rivers are the Fox, East (or Manitou), and Big Suamico. It also has within its limits a part of Green Bay, the northern boundary line of the county crossing the Bay about twelve miles below the City of Green Bay, where the Bay is about 14 miles in width.

There are several large settlements, consisting of well cultivated farms and substantial improvements; the principal are in the towns of Green Bay, Glenmore, Holland, the Belgian Settlement, Morrison, New Denmark, Howard, Suamico, Duck Creek, Belleview, Wrightstown, Depere, Lawrence, Preble and the Oneida Settlement. The farms are mostly well-cleared and well-cultivated, with good and substantial rail and board fences, comfortable dwellings of log or frame construction, many of the latter being neat and commodious, and good and ample barns, stables and other out-buildings.

The farming community are of a mixed character, being Americans, Germans, Belgians, Hollanders, some Irish, Danes and French; but the latter, who formerly formed a large majority of the population, are fast disappearing before the people of other classes, who greatly outnumber the *old Canadian French.* As a general thing, the foreigners who cultivate the soil are good farmers: they do not cultivate very *large* farms, but do it well.

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INDUSTRY OF CALUMET COUNTY.

BY LE ROY GRAVES, OF GRAVESVILLE.

Calumet County lies on the east side of Lake Winnebago, and was first settled in 1833 by the Brothertown Indians, (so says my informant) and several farms were soon put under a good state of cultivation.

The first white settlers, four or five in number, arrived in 1842, and in 1849 and 1850 the county began to populate rapidly.

Calumet County is heavily timbered with maple, basswood, oak, elm, ash, and in some portion of it, pine. It has a gently rolling surface, with a rich alluvial soil. Its rivers are the north and south branches of the Manitowoc, the Kill Snake and Spring Creek. There are many very beautiful springs in this county. There are also some marshy lands which are timbered with tamarac and black ash, and some without timber, on which are raised large quantities of hay.

The soil is well adapted to the growing of wheat, corn, oats, potatoes, &c., producing generally to the acre as follows:

Wheat,	per acre,	28	bushels.	Corn,	per acre,	50	bushels.
Oats,	"	75	"	Barley,	"	40	"
Millet,	"	60	"	Rye,	"	36	"
Beans,	"	20	"	Potatoes,	"	250	"
Turnips,	"	400	"				

The products for the last year have ranged much higher than the above figures.

Calumet County embraces nine towns, namely:

New Holstein,	settled by	Germans.
Brothertown,	"	Whites and Brothertown Indians.
Stockbridge,	"	Whites and Stockbridge Indians.
Harrison,	"	Americans and Foreigners.
Woodville,	"	Americans and Foreigners.
Chilton,	"	Americans and Foreigners.
Charlestown,	"	mostly Americans.
Rantoul,	"	mostly Irish.
Brillian,	"	mostly Germans and Americans.

In which is manufactured anually about 1,400,000 feet of lumber, nearly half of which is pine; besides 500,000 shingles; also 100 tons pot and pearl ash, and 150 tons "black salts."

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On the Manitowoc river, in the towns of Chilton and Charleston, are rapids, extending three miles in length, on which are built several manufacturing establishments, among which are saw and grist mills, sash and chair factories, and cabinet shops. There are also two steam grist mills and one steam saw mill in the above named towns.

I should judge six thousand dollars worth of furniture, and about eight or ten thousand lights of sash were made yearly in those places.

I must not omit speaking of the beautiful maple groves, which are very plenty on nearly every farm in the county, with the exception of the older ones in Brothertown. About 75 tons of sugar is made annually in Calumet County, and also about 5,000 gallons of maple molasses.

Cattle here are very abundant, and considerable pains has been taken to get those of a good quality: I think you will not find in the State a much better stock of cattle than in Calumet County. Sheep also thrive nicely; of which I should think we have about 5,000 in number. They yield on an average 3½ or 4 pounds of wool per head.

There are three villages in Calumet County, namely: Chilton, Gravesville and Hayton, all of which are growing rapidly, and in which are many useful manufactories. They are situated on the Manitowoc river, are in the center of the County, and are inhabited by a stirring and enterprising people. These villages are three-fourths and one and a-half miles apart, Chilton being at the head of the rapids, Gravesville three-fourths of a mile down the stream, and Hayton one and a half miles farther below. There is a Democratic paper published at Chilton by J. P. Hume, and at Gravesville J. N. Stone edits a Republican sheet. These villages are rapidly gaining in size and importance, and contain such manufactories as are common to such places, viz: cabinet, blacksmith and tin shops; of fanning-mill factories, carriage shops, sash and chair factories, there are several. Stores, hotels, saloons and breweries in abundance.

But little attention has as yet been paid to fruit-growing,

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but from the experiments made, the evidence is conclusive that for every species of fruit usually grown in this State, (peaches excepted,) there is no county ahead of Calumet. There were about one hundred bushels of apples raised last year in this county, by a few of our farmers, besides some very nice pears, cherries, &c. Currants and wild fruits grow in great abundance; wild plums are quite plenty, and grow very large, some of them being nearly as good as the tame ones. There are some marshes in the eastern part of the county, where cranberries are very plenty.

I have traveled through nearly all parts of this State, and I find no county in it better adapted to all kinds of agricultural purposes, or with a more productive soil than Calumet; and I do not think there is any portion of the State so generally healthy as this.

INDUSTRY OF CLARK COUNTY.

BY G. W. KING, OF NEILSVILLE.

Clark County is fifty-four miles in length, from north to south, and thirty miles wide from east to west; and contains forty-four townships of land. The principal stream in the county is Black river. It runs nearly through the centre of the county from north to south; it is a very rapid and rocky stream, varying in width from fifty to one hundred yards. It has numerous branches in the southern or middle portions of the county. The north-west portion of the county is drained by the Eau Claire river and its branches. The north-east portion is partly drained by streams that run into the Wisconsin river.

The greater portion of the land in the southern tier of townships is generally very level, and in many places it is swampy. The soil is generally poor, being principally sand and gravel, and is hardly fit for cultivation. There is, however, some good land in the four townships in the southern

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part of the county; but I do not think that more than one-tenth part of the land is fit for cultivation.

The timber is principally pine, of small size, and but a small portion of it is large enough for sawing. In some places the lumbermen have culled out all the pine that was large enough to saw. Fire has run through this timber and killed all that was left. The greater portion of the timber killed by the fire is still standing; in some places there are hundreds of acres of trees thus killed, and their blackened trunks presents to the eye a dreary picture of desolation. There are also in these townships a great many windfalls; some of which are miles in length. Here can be seen thousands of acres of trees that have been blown down or broken off, the stubs of which are still standing. The fire runs through these windfalls every year or two, and kills all the vegetation, leaving nothing but the blackened timber that lies upon the ground, or the stubs of those that were broken off.

That portion of the county that lies in townships 24, 25, 26 and 27, Ranges one East and one and two West, is well-watered by Black river and several large creeks that empty into Black river. The timber on the bottoms along these creeks is principally white pine of excellent quality; some of it is very large; it is no uncommon thing for trees to be cut on the banks of these creeks that yield from three to five thousand feet of inch lumber each. The timber on the ridges between these creeks is sugar maple, basswood, butternut, oak, elm and black birch. The surface of the country is rolling, and lies well for farming purposes. Seven-eighths of the land in these townships would be tillable if cleared up. The soil is very rich, heavy loam, resting on a clay subsoil, and produces good crops of hay, oats, wheat, rye, corn, potatoes, turnips and all kinds of garden vegetables.

The north-east portion of the county is flat and swampy; the timber is pine, hemlock, cedar, balsam, spruce and white birch. There is very little land that is fit for cultivation.

The west and north-west portions of the county are varied in character; some parts are rolling and timbered with maple,

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basswood, butternut, oak, elm, &c., with a rich soil, and are well watered. Other parts are flat and swampy. In this portion of the county there are vast quantities of white pine of excellent quality. One-fourth of the land would be fit for the plough if cleared up.

The first settlers in Clark County were lumbermen, who paid but little interest to Agriculture; some of them cleared up small farms near the saw mills, and raised such large crops of grass, oats, corn and potatoes, that in 1856 many persons came into the county for the purpose of opening farms, and since that time there has been a steady increase of the farming population.

The soil appears to excel in the production of grass and oats. It is the remark of almost every one that they never saw such crops of grass. I know of pieces of land that yielded three tons to the acre the past season—land that three years ago was covered with a heavy growth of timber, and the stumps not yet rotted out. I think, from the best information that I can get, that the hay crop of this county the past season averaged more than two tons to the acre. Oats do well in this county. It is no uncommon thing for a field of oats to average from seventy to eighty bushels per acre. Wheat and rye yield well. The wheat crop the past season yielded from twenty to forty bushels per acre.

This county offers great inducements to settlers. Thousands of acres of choice land can be entered at the Land Offices at Eau Claire and La Crosse at government prices ($1.25 per acre). Roads have been opened through the county, bridges built, and school houses, saw mills, grist mills, stores, blacksmith shops, wagon shops, and furniture shops. The pineries afford a good market for hay, flour, corn, oats, beef and pork; and will for a great many years to come. Nine-tenths of all the provisions consumed in the pineries, is hauled from the counties south of this. There are hundreds of men and teams at work in the pineries in this county this winter. It is estimated that there will be logs enough cut in Clark County this winter to make seventy-five millions feet of inch lumber. This county

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is remarkable for its healthfulness; fevers are hardly known. The atmosphere is dry and pure. The county abounds in springs of the purest soft water; and there are numberless streams running through the hard wood lands. They are all rapid streams. Cattle thrive here better than they do on the prairies: the woods are full of wild pea vines, on which cattle can live and do well in the fall until the snow comes.

The winters are generally cold and dry; it seldom rains during this season of the year. The country is so rolling and there is such an immense body of timber, that we scarcely feel any wind; it is consequently far more pleasant here in the winter than on the prairies. This would make the best dairy country of any part of the State I have ever seen. In a few years it must have a great reputation for its butter, cheese, and cattle.

The county is steadily settling up with an industrious class of men, a good portion of them from New England, New York, Pennsylvania and Ohio, with some Germans, English and Canadians.

INDUSTRY OF COLUMBIA COUNTY.

BY HENRY CONVERSE, OF WYOCENA.

The settlement of Columbia County was commenced about the year 1840 or '41, in the south-east part of the county, and in 1843 and '44 a few families located in the north-east part, after which time the county was rapidly settled.

RIVERS.—The Fox river rises near the north-east corner of the county, running westerly through the north part of the county to Portage City, thence north-easterly. The Wisconsin river runs through the western part of the county. The several branches of Duck Creek unite near the center of the county, whence it flows west and unites with the Wisconsin. The Catfish waters the south-east part, and in the

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south part of the county there are good mill-streams, on which are several mills.

LAKES. — Swan Lake, Mud Lake, George's Lake and other small lakes (names unknown).

WASTE LANDS. — In respect to waste land in this county, there is in almost every township more or less swamp land that is worthless, being wet and too low to drain. There are also in the town of Caledonia high bluffs along the Wisconsin river, that are not capable of cultivation.

PRAIRIES.—Portage Prairie in the north-east, Fountain prairie in the south-west, and Empire prairie, south. Nearly one-half of the county is prairie; soil of the richest and best quality. The rest of the county is openings. The timber, except along the streams, is mostly burr and black oak; the soil variable from very good to very poor.

Wheat is the principal crop grown on the prairies and best openings. The average yield per acre for past years has probably been about 15 bushels. Rye and corn are grown quite extensively on the lighter soils; average yield of rye from 10 to 15 bushels; of corn from 20 to 30 bushels per acre. Potatoes average about 100 bushels per acre.

There has been a very decided improvement in the agricultural industry of the county within a few years; in building houses, barns, and in a more thorough system of farming.

There are *Flouring Mills* in the following towns: Courtland two, (one of them steam) Wyocena two, Portage City one, Dekora two, Fountain Prairie one, Columbus one, Lodi two, Westpoint one.

There is no lumbering of any amount carried on in the county; there are three or four saw mills, but they do but little business.

There is a Tannery at Portage City, but the amount of business I cannot state.

There are two Lager Beer manufactories at Portage City doing an extensive business.

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INDUSTRY OF CRAWFORD COUNTY.

BY ALFRED BRUNSON, OF PRAIRIE DU CHIEN.

TOPOGRAPHY.—This county contains the equivalent of 15 townships, or 540 square miles. The general surface is rolling or hilly. The river hills or bluffs rise about 450 feet above the level of the large rivers, diminishing as we follow up the smaller streams, till they disappear in a rolling surface. There is scarcely an acre of waste land in the county. A few perpendicular bluffs are seen along the river hills, and some of the slopes are too steep for plowing, but timber and pasturage occupy such places to the brow or foot of the cliffs, and the cliffs afford excellent quarries for building purposes. Along the rivers are wet bottom lands and islands, with but little or no waste lands, for they afford timber and grass in large quantities.

THE FIRST SETTLEMENT of the county was by the Canadian French, for hunting and Indian trading purposes at Prairie du Chien. The first white man who settled here, as nearly as we can now decide, did so in 1720. About 1747 it became a trading post, and thereafter the discharged employees settled on the prairie, for farming and hunting, when not employed by the traders, till in 1793 some 40 or 50 families, making say 200 souls in all, had divided the prairie into 43 farm lots, with about the same number of village lots. The proper settlement of the country by Americans cannot be dated farther back than 1836, when the French and mixed bloods numbered about 350, not exceeding 400 souls. All of them lived on the prairie, the adjoining lands being yet unceded. In 1837 the Winnebagoes ceded the land, but settlements did not extend into the country until 1842, '43. The inhabitants now are about 8,000.

PRAIRIE DU CHIEN is the oldest and the principal town in the county. It is situated on the prairie of that name, which extends seven miles long, and from one and three-quarters wide on the margin of the Wisconsin river; it runs up the Mississippi to a point. It now contains about 3,000 inhabit-

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ants, one-third of whom are in the lower town, which has sprung up about the depot of the Milwaukee & Prairie du Chien Railway since 1857, when the road reached that point. The site of the town is unequalled for beauty and extent by any on the great river: and in it are located the principal stores, machine shops &c., of the county. There are also several villages growing up in the county, along the rivers and the railway, which are becoming prominent business points.

THE SOIL of the county is of the best character for agricultural purposes. It consists of a soft clay, covered with a vegetable mould. The bottoms and plains along the rivers are sandy. As high as 55 bushels of winter wheat have been taken from an acre, though from 20 to 30 is considered an average crop. Fifty bushels of corn is an average crop per acre, though 120 have been taken. The produce of potatoes varies with the season and the *kind;* some kinds yielding as high as 600 bushels to the acre, while others do not reach 100. Oats and barley do very well. The sorghum or chinese sugar cane matures and does well, especially on the sandy lands. The tame grapes do tolerably well on the up lands, but better on those that are more moist. Sweet potatoes, and even cotton have matured on the sandy plains.

THE TIMBER of the county is mostly oak, of the different varieties. The sugar tree or hard maple, soft maple, elm, hickory, white and black walnut, willow, cotton-wood, red cedar on the cliffs of the hills, and basket willow on the river bottoms in any quantity, which the Germans who have wrought willow in their "fatherland," say equals, and in toughness excels that of the old country. That portion of the county which lies west of the Kickapoo river is oak openings, with small pieces of prairie, while that on the east of that river is a dense forest, mostly of oak, with linn, and other kinds intermixed with it.

THE WATER COURSES, besides the great rivers, the Mississippi and Wisconsin, are numerous, and there being no swamps or marshes at their heads, are supplied entirely from

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springs in dry weather, and never fail or run dry. The springs are abundant, the water is pure, except a slight tinge of lime, from the abundance of that rock in the country. They issue from all levels, from within 40 feet of the top of the hills, to their base, and some of them are large enough at their heads for machinery; and as they seldom freeze in the coldest weather, they afford the best of water power along the several streams which they form. The Kickapoo is the largest of the interior streams, and runs nearly central from north to south through the county, emptying into the Wisconsin 15 miles from its mouth. It is 150 miles from its head to its mouth, about 100 of which meanders through this county, though only 24 miles in a direct line. It will average 30 yards in width, and 3 feet deep at its lowest stage. The current is not rapid, owing to its great meandering, but the fall in its whole course in the county cannot be less than 100 feet, and by cutting across the bottoms, at its bends, extensive water powers can be had.

Agriculture in the county is not in the highest state of perfection, it is too new to be so; still, there are many farms that will bear favorable comparison with those of almost any new county. Less than one-twentieth of the tillable land is now under cultivation, and of course the county could sustain at least twenty times its present inhabitants. There is no greater sheep country in the world; they are healthy, and such is the nutritious quality of the native grasses and herbage, that sheep driven from more Eastern States to this, have, after overcoming the drive, yielded one-fourth more meat, fat and wool, than the same class did before immigrating. Hundreds of Canadian horses winter themselves in the river bottoms and in the valleys. Cattle are more easily wintered than further south, because of the climate. We have no winter rains nor sudden changes in the weather; the weather, though cold, is uniform and dry. The snows are seldom over one foot in depth. And those who have come from further south, think that our wild grasses, upon which most of our inhabitants depend for fodder, are more nutritious than those which

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grow further south, and say that cattle there need grain added to their hay, to come out in the spring as well as they do here on hay alone.

HORTICULTURE is but in its infancy; yet we have some as fine specimens of apples and grapes as can be produced anywhere. We have one kind of wild grape that makes the best of Port Wine. The small fruits generally flourish finely, and nurseries of all the varieties of fruit suited to the climate are being cultivated with success.

MANUFACTORIES are but few in number, though greater inducements for them can scarcely be found in the Great West. We have two plow factories which turn out about 8000 a year, (yet twenty are imported to one made at home,) one fanning mill factory which sends out its hundreds per annum, one foundry and machine shop, which cannot supply the demand. We have one small woolen factory in the north part of the county, and steam and water flouring and saw mills; also various mechanic shops for saddles, harness, tin, furniture, shoes, smith work, guns, cooperage, &c. We have two wagon and carriage shops, but they can't half supply the home demand; and we have one soap and candle factory doing a good and profitable business, but not equal to the demand.

No greater opening can be found for extensive manufactories. Five hundred reapers are sold per annum north and west of us; all of which could be made here and save transportation. Two million pounds of dried hides pass this place annually to the east to be tanned, curried, and made into shoes, boots, saddles, harness, &c., &c., and be brought back for consumption, while the provisions consumed by the workmen East are carried from the West.

COMMERCE.—Our great commercial business is of the transit character, at the depot of the Milwaukee & Prairie du Chien Railway. This depot is second to none on this great river; connected with it directly there are eighteen steamboats in constant employ, besides six or eight of other lines, and as many more transient ones, all of which bring and take away

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freight and passengers; and in the past year 3,500,000 bushels of wheat, 25,000 hogs, 3,000 head of fat cattle, 2,000,000 lbs. of dried hides, besides other smaller items, were shipped eastwardly; and 30,000 tons of merchandise came westerly; passengers both ways corresponding with the freight.

And besides this depot, there are two others in the county which ship to the east at least 500,000 bushels of wheat, and to which merchandise is brought and sold, not included in the above amounts. It may be estimated, therefore, that the produce of the county is equal in value to $1,000,000. The aggregate sales of goods, including groceries, amounts to over $500,000 per annum.

Of the Mines of the county and our mineral resources, W. E. Parish, Esq., makes the report hereto annexed. Being owner of part of the mineral lands, and having paid particular attention to the subject, his statement may be relied upon as correct. He writes as follows:

"It is impossible to give a correct idea of the amount of mineral of the different kinds to be found in the county. Lead, copper and iron have been found in different localities since 1843. No heavy "leads" have been opened, but the specimens found are of the richest quality; and miners who have examined the grounds are of opinion that there are heavy deposits in the ground that would require but a small amount of capital to reach. The appearance of the country is very similar to the lead regions of Galena, Dubuque and Mineral Poiut, and there is no reason to doubt that in a few years rich "leads" will be opened here.

"In two different locations, covering an extent of from five to eight thousand acres each, an excavation can hardly be made without finding copper ore of a good quality. Of one of these localities Prof. David Dale Owen gives us an interesting and encouraging account in his work on the Geology of Iowa and Wisconsin, to which the reader is referred. * * *

The mine lies well for drainage, and the ore is of a kind easily reduced in a furnace, and yields so good a percentage of copper, (about twenty per cent) that it would be well worth

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the expense to prove this mine further than it has yet been done.

"At a small expense the value of this discovery could be determined, by ascertaining to what extent the ore is likely to traverse the magnesian limestone before entering the sandstone, in which latter formation the vein would probably dwindle or entirely disappear."

A few miles south and east of the above, copper ore has been discovered, of as rich, and apparently as extensive deposits as the other, and in a short distance from that, lead ore has been found, indicating large deposits.

In many parts of the county iron ore is very abundant, cropping out in ledges, easy of access, and of excellent quality. No one has yet attempted to open these mines of iron. They lie from three to eight miles from the Mississippi or railway. Capital could be profitably employed in so doing. The demand for pig metal and castings is very great, all of which now are brought from the East at great expense.

In connection with this we may add, that quarries yielding quick lime and water lime are numerous; and that marble, quite equal to the Vermont marble, is cropping out of the hill back of this place.

INDUSTRY OF DOUGLASS COUNTY.

BY JAMES S. RITCHIE, OF SUPERIOR CITY.

That portion of Wisconsin bordering upon Lake Superior was visited by the French Missionaries and "voyageurs" from Canada, about the same time that the English Cavaliers landed on Virginia soil. The historian, Bancroft, remarks that "It was not the thirst of sordid gain that influenced the first white man who looked down into the clear waters of Lake Superior, or who gazed with awe upon the mighty Mississippi. The spirit of religious enthusiasm explored the basin of the great lakes and the valley of the Mississippi. From Quebec the

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French Catholic Missionaries ascended the Ottawa, and crossing the chain of small lakes, they preached the word of God in the hovels of the Algonquins on the bays of Huron. They sailed among the islands of the Manitouline Archipelago, and at Saut St. Marie, at the outlet of Superior; entering that vast inland sea, they settled at LaPointe and Bayfield, and penetrated to the farthest extremity, (now Douglas County), where the St. Louis enters the lake amid groves of pine."

The progress and prosperity of the new towns and settlements bordering upon Lake Superior have been almost mavelous; yet nature has not been easily won, or her treasures gained without a contest worthy of their merits.

The first U. S. Surveyor, Mr. G. R. Stuntz, arrived at the head of Lake Superior on the 20th of May, 1853, and commenced to survey the lands now comprised within Douglas County. Not a tree or a bush had been cut where now stands the town of Superior. The site was then covered with a dense growth of pine, spruce, fir and birch trees. In June several small boats arrived from Ontonagon, Michigan, with settlers, who located upon the "Mineral Ranges," from ten to twelve miles from the lake. In July and August a number of settlers arrived from St. Paul, Minnesota, and settled upon the banks of the Nemadji river. In January, 1854, a road was cut out to the St. Croix by a company of volunteers. In March the town site (320 acres) known as Superior City was claimed, and which has been ever since in litigation. In the spring of 1854 a company under the title of "Proprietors of Superior" was organized for laying out the town of Superior, and Messrs. Newton and Clark appointed surveyors. The plat was recorded by the sixth of November, 1854. The number of houses and cabins, some partly finished, in the spring of 1855, was 35, and almost the entire town site was covered with a dense forest. The State Census reported the population then at 385; the U. S. Census of 1860 at 828. The first term of Douglas County Circuit Court was held on the 2d of August, 1855, and on the 8th the U. S. Land Office was opened.

The experiment of raising winter wheat was successful be-

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yond the most sanguine expectations; the Messrs. Wright repeated their experiment the next year and raised a beautiful plump grain, heavier per bushel by several pounds than the general average, and at the rate of 25 bushels per acre, (some of the stumps remaining in the field.)

In 1858 the author of this communication exhibited a number of Superior products at the Sixth Exhibition of the U. S. Agricultural Society, at Richmond, Va., and was awarded the diploma of the Society for them. The Lake Superior Agricultural Society was organized by Mr. J. S. Ritchie, July 18, 1859.

Great attention has been devoted to the collection and arranging of agricultural, botanical and mineral specimens, from our region, and the collection is now believed to be the largest in the north-west. The varieties of our beautiful white and red winter and spring wheat, timothy, rye, oats, barley, tomatoes, tobacco, vegetables, &c., are exhibited in handsome glass jars, greatly to the astonishment of farmers from the Middle States, who have never seen rye 8 feet in height, white winter wheat weighing 65 pounds per bushel, pea vines 12 feet in length, tobacco leaves *three* feet in length, and potatoes weighing from 2 to 3 pounds.

The U. S. National Agricultural Exhibition at Cincinnati, Ohio, awarded Mr. J. S. Ritchie another special diploma in 1860, for the products of Lake Superior, and he has yet to find white winter and spring wheat either in Chicago, Detroit, Cleveland, New York or Philadelphia, to compare with that raised in Douglas County, or celery, cucumbers, cabbages, peas, &c., raised within a few hundred yards of Lake Superior.

It is hardly worth while to enter into a minute description of our soil, when we have such astonishing proofs of its capacity for cereals, tobacco, &c. The numerous specimens exhibited by the L. S. Agricultural Society will go much farther than volumes of books or newspaper articles. They speak for themselves. Dr. Owen, the celebrated U. S. Geologist has given in his report to the Government a full description of the red clay or marl lands of Lake Superior. He says; "The red

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clay and marl lands occupying the high plains skirting Lake Superior, are characterized particularly by the preponderance of oxide of iron, from which they derive their color, and which amounts to 4½ per cent., or nearly one-half of the weight of the saline matter. It is always a retentive soil, from the abundance of argillaceous earth which enters into its composition, and has proved productive in the highest degree. Vegetables of the largest size and finest quality are grown in it, and for the production of wheat, rye, barley and oats, it cannot be surpassed; forty bushels of wheat to the acre is the average on these lands, and in many instances they have yielded fifty bushels." Mr. F. S. Chasseur, practical horticulturalist, in a letter to me of October 20, 1858, says: "I began the spring work in my garden on the banks of the Nemadji, near Superior, in a sandy loam, May 6th, planting beds of asparagus from last year's seedlings, varieties of peas, beets, onions, parsnips, radishes, currants, &c. The peas, beets and onions were ready for market the latter part of June, and the radishes matured three weeks after sowing of seed. May 10th, planted Carter potatoes in drills 2½ feet, when dug, October 4th, the result from the half bushel planted was twelve bushels; the potatoes averaged from three-quarters to one pound each. One-third of the real Irish potatoes you sent me from Ireland, were cut with two or three eyes in each piece, and when dug, October 4th, resulted in 4½ bushels; twelve of them averaged 1 lb. 8 oz. each. May 15th, planted the early corn you sent me, the ears were fit for cooking the latter part of August, and the stalks were 10 feet in height. My tobacco was ready for cutting October 3d, and the leaves averaged 2½ feet in length."

In this connection I will mention that cabbages have been raised weighing 27 pounds, of 12 feet in circumference; parsnips 2½ feet long; beets 1¾ feet long, from 14 to 18 pounds in weight. Mr. Rockford exhibited eight long turnips, weighing 120 pounds.

In regard to the climate of Lake Superior, Dr. Owen in his report to the United States Government, says: "A healthier region does not exist. The purity of the atmosphere makes it

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peculiarly adapted to all those afflicted with pulmonary complaints, and such a thing as consumption, produced by the climate, is almost unknown. The Bay of Superior opened April 1st, 1860. The propeller Burlington left Bayfield December 8th, and went into Ontonagon the same day for winter quarters. This shows over eight months, or 250 days of navigation in 1860. Lake Superior never freezes in the middle, and but for a short distance from the shores.

The military road from Superior to St. Paul, and the road from Mille Lac and Crow Wing, Minnesota, is now in good order. The St. Croix & Lake Superior Railroad possesses a grant of land from Government of nearly 1,000,000 acres, which will complete it within a few years. The Lake Superior & Mississippi Railroad Company received a grant of swamp lands from Minnesota, amply sufficient for its completion.

The exports of the port of Superior of lumber for 1860 were over 200,000 feet, and about the same quantity of shingles, and laths; about 600 barrels fish, potatoes, and furs, besides numerous cattle driven in from Minnesota, and shipped to the copper mines.

The difference in distance between Superior to Europe, and Chicago to Europe is but trifling, each place being at the head of a great Lake. After passing the Straits of Mackinaw, the course of a Superior vessel and a Chicago vessel is identically the same. The trade of supplies for, and emigration to northern Wisconsin, British America, Minnesota, &c., will be distributed from our docks.

A copper mine has been opened on the Mineral Range near town. The shipments of copper and iron ore from Lake Superior are rapidly increasing. In 1860 the various mines shipped over 8,600 tons rough, equal to over 6,000 tons ingot copper, valued at $420 per ton, or $2,500,000. The shipments of iron ore from Marquette exceeded 150,000 tons, valued at $588,239. This ore is from 60 to 75 per cent. pure, and for strength and tenacity is without a rival in the world.

The importation into Lake Superior of merchandise, machinery, cattle, provisions, &c., amounted to $5,298,000; and the

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exports of copper, iron, fish, furs &c., to $3,071,069. Among the items of export, and which ought to have been raised and exported from Douglass County, instead of being brought up from 700 to 800 miles from Ohio, Illinois and Michigan in 1859, were 313,724 lbs. butter; 39,259 bbls. flour; 71,738 bus. coarse grain; 1,006 tons ground feed; 3,781 bbls. beef; 4,890 bbls. pork; 1,761 cattle &c.—A most disgraceful exhibit. The imports of 1860, owing to the rapid increase of population, were at least 50 per cent. more than in 1859. Let the St. Croix & Lake Superior, or the Lake Superior & Mississippi Railroad be completed, and we will soon stop the importations.

In conclusion, I will add that the town of Superior occupies the most prominent position in the North-west, at the head of navigation, and it forms the gate of communication between the Eastern and Western travel, and for a two thousand miles of uninterrupted lake and river navigation to the Atlantic, and nearly the same distance to the Gulf of Mexico. A place with such a situation, surrounded by so magnificent a country, cannot but have a great and glorious destiny.

INDUSTRY OF GREEN LAKE COUNTY.

BY H. M. POWERS, OF DARTFORD.

Green Lake County lies between 43° 24′ and 43° 48′ north latitude, and 89° 20′ and 89° 35′ west longitude. It contains about 374 square miles.

Its surface is gently undulating; about one-fourth being occupied by some half dozen prairies of various sizes and unsurpassed fertility. The other three-fourths is "openings," covered with the different kinds of oak that abound in the West, with an occasional grove where the maple, butternut, &c., are found to some extent. Portions of these openings are somewhat sandy, but generally they are rich and productive.

It is watered by the "noble Fox" and its tributaries, the

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two principal of which are the Grand and the Puckyan rivers. Fox river flows through the county from the south-west to the north-east corner, and is navigable for steamers of light draft for some distance beyond the bounds of the county.

Green Lake is the pride of the county. It is a beautiful sheet of water 12 miles in length and from 2 to 3 in width. Its waters are almost perfectly transparent, of great depth, and its shores present scenery of great variety and beauty.

Little Green Lake, Lake Maria and several smaller sheets of water are within the county. Lake Puckaway is partly in Green Lake and partly in the adjoining county of Marquette.

Berlin, the county seat, is the only place that aspires to the character of a city. Markesan, Manchester, Kingston, Marquette, Dartford and Princeton, are villages following hard after, and some of them are beginning to adopt city customs to some extent.

Agriculture is the main business of the county, and wheat the leading article of farm produce. It is raised in large quantities, and the quality is said by dealers and millers to be superior. The coarser grains are produced in quantities sufficient to supply the home demand. Pork was formerly a staple article, but latterly wool-growing seems to be fast taking its place.

Much attention was paid to fruit culture by the pioneers of this section, and large orchards of very excellent varieties were planted, but the two "hard winters" destroyed many of the trees, and produced much discouragement. Later efforts have been crowned with success, until now there is a limited supply of apples, pears, grapes, and all the smaller fruits. And if the present efforts are continued and succeed as they are now doing, Green Lake County will be second to none in the U. S. for the supply and excellence of the hardier kinds of fruit.

Our manufactories are principally those of flour, lumber and agricultural implements, with which the county is tolerably well supplied. One woolen manufactory recently established succeeds beyond the expectations of the public or of even its most enthusiastic proprietor.

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The commerce of the county is carried on *via.* Fox river, which traverses its northern and western portions, and the Milwaukee & Horicon Railroad, which has its terminus at Berlin, and depots at Ripon and Brandon in Fond du Lac County, near its eastern border. A canal is in contemplation to unite the waters of Green Lake with those of the Fox river at the mouth of the Puckyan, which will introduce steamboat navigation into the very centre of the county, and into the midst of its best wheat-producing territory.

Telegraphic communication is held with the outer world by way of Berlin and Milwaukee.

In educational advantages this county will compare favorably with its neighbors, yet it is hoped that recent changes will lead to very great improvement in this respect.

INDUSTRY OF JACKSON COUNTY.

BY D. J. SPAULDING, BLACK RIVER FALLS.

This is, and has been, a lumbering district. The Agricultural portion of our county only began to be developed some five or six years since, but in that time has made fair progress.

At our recent Agricultural Fair there were 300 entries, and most of the departments were well represented. The swine were very fine, especially some of the Suffolk and Essex hogs. There were some fine draft and carriage horses, Devon and Durham cattle, Merino sheep, besides many fair grade cattle. The show of grain and roots was excellent. We were not very largely represented at the State Fair, only six entries being made from the County, but we took four first and second premiums on grain, not being represented in anything else, on account of the high prices of freights on the railroad. They charged us a little more than the grain was worth for carrying it to Madison, and full fare both ways for the person representing us.

Ours is mostly a wheat-growing county, on account of the

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better price it brings in proportion to cost of transportation. Our wheat is pronounced as good as goes into the Milwaukee market; specimens of which often weigh 69 pounds to the struck bushel. The usual yield is about 25 to 30 bushels per acre, and often more. Sparta is our market. We raise mostly spring wheat, of the Club variety. Of late the Fife, Rio Grande, and other varieties have claimed some attention, but the first three are generally preferred among our farmers. Not much extra pains is taken in its cultivation. The ground is generally ploughed in the fall, and the wheat is harrowed in with a common square harrow in the spring, which finishes the work until harvest.

We have excellent crops of oats, rye, barley, potatoes and fair corn. Potatoes with us are generally large and mealy, yielding from one hundred to four hundred bushels per acre. The rot is not much known, except among the Meshannocks. We often get 80 bushels of oats to the acre; 50 bushels, however, being about the average on the heavy lands. These crops are mostly consumed in the lumber woods adjoining our county, and in Clark County, where a great amount of fine timber is cut for manufacture in Jackson and La Crosse Counties, and for mills on the Mississippi.

It is calculated that Black River and its tributaries will have at least 50,000,000 feet of lumber put in them this winter, which furnishes employment for a great many men in cutting, hauling, driving, rafting and manufacturing.

We have 22 saw mills, small and large, and 8 flouring mills, most of which have two or three runs of stone, and three or four of which are fine mills, capable of doing a great deal of work, and of doing it well.

We have iron works one mile above the Falls. The iron is of the finest quality and in the greatest abundance. The chief difficulty with the workers has been to get some material for fluxing, the ore being so rich that it seems almost impossible to separate the iron from the cinder; but I leave this to some one who understands it better.

The general surface of the county is good; the western and

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northern portions being high rolling land and fine valleys, well watered, the principal of which is the Trempeleau. The ridges are mostly timbered with oak, and some patches of tamarac and pine along the streams and heads of branches. Scarcely a section of this but has its fine streams of water, or nice cold springs of soft water. Soil mostly loam or clay. On the east side of the river the land is mostly sandy, except the south tier of towns, which is mostly oak openings; and the fine crops testify to the excellent quality of these lands. North of this, for the most part, there is level sandy land, with occasionally an iron mound or sandstone ridge. Here are also some quite extensive cranberry marshes, and a number of small ones, tamarac swams, pine barrens &c. The pine along the streams is excellent and almost inexhaustible.

Our county contains some 4,134 inhabitants, three-fourths of whom I should judge were engaged in agriculture, and the remainder are lumbering and manufacturing.

Farmers have as yet only commenced building, although some fine houses and fine barns are found in traveling about the county. They are generally making calculations to build when they get their grain marketed. They still continue to enlarge their farms, and the new breakings around testify that new comers are making homes among us. Let them come—there is still room and land at fair prices.

INDUSTRY OF JUNEAU COUNTY.

BY J. T. KINGSTON, OF NECEDAH.

Juneau County, lying on the west side of the Wisconsin river, and adjoining Sauk County on the north, is almost wholly a level plain; the only exception to this being a small tract situate in the south and south-western portions of the county, which embraces a portion of the bluff range lying on and around the head waters of the Baraboo and Kickapoo rivers. The soil in the valleys in this bluff country is a deep black

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loam, very productive for all kinds of grain grown in this latitude. The bluffs are also covered by a rich soil, producing a heavy growth of all kinds of hard timber known in this country. North of these bluffs, and extending to the Lemonweir river, a distance of from three to six miles, the country is, as before stated, very level, the soil mostly of rather a clay nature, and rather cold, owing to the near approach of the surface water, but as a general thing producing good crops of all small grains. North of the Lemonweir the same uniform level continues to the north line of the county; a great change in the nature of the soil, however, takes place. Starting from the mouth of that river and running up on the north side a distance of some twenty miles, is a strip of open swamp and meadow lands, from two to three miles in width, interspersed with here and there ridges and islands of dry land, covered mostly with a thick growth of small sized timber, chiefly birch, poplar, pin oak and gray pine.

The marsh lands are mostly without timber; near the streams producing an abundance of wild grass suitable for hay, but farther back valuable only for the production of cranberries. Following along the west bank of the Wisconsin, above the Lemonweir and up to the county line, is a strip of dry sandy land, from three to four miles in width, covered, excepting a few small prairies, with a thick growth of small gray pines, usually from six to ten inches in diameter, and valuable only as fuel and a poor quality of fencing. The whole western part of the county, extending from the Lemonweir north, is one uniform and almost unbroken marsh, occupying about a central position in what is known as the "Great Cranberry Marsh." Around the borders of this marsh, and along the margin of the Lemonweir, Yellow, Little Yellow rivers and Cranberry creek, is an immense amount of grass lands of a choice description, which must in time become of considerable value.

The streams of importance bordering on and passing through the county are the Wisconsin on the eastern border, the Lemonweir passing nearly east and west through the southern portion of the county, and emptying into the Wisconsin at the

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head of the Big Dells, the Yellow river coming down through the county in a south-easterly direction and emptying into the Wisconsin about ten miles above the Lemonweir, the Little Yellow and Cranberry creek, both tributaries of Yellow river, the former emptying in about three miles from the mouth, and the latter some fifteen miles farther up.

South of the Lemonweir agriculture is carried on to a considerable extent, and is in fact the only business of any great importance in that part of the county; but north of that stream, with the exception of a settlement contiguous to the mouth of Yellow river, but little attention is paid to that branch of industry. The lumber business is the chief occupation of central and northern portions of the county. The mills, both steam and water, are situated on Yellow river, and receive their supply of logs chiefly from the pineries in Wood and Marathon connties. These pineries are sufficient to supply the present demand for many years to come.

With the exception of the bluffs above mentioned, and a small district in the south-eastearn corner, but little rock is found in the county, and that in detached points or elevations, rising in some instances to a highth of over 250 feet above the surrounding plain. Sand stone is the almost universal formation of the county, a few hills of more or less extent and elevation occur in the central part of the county of an entirely different formation; a combination, apparently, of granite and quartz, thrown up, torn and shattered, evidently by some great subterranean convulsion. Owing to the total absence of limestone from the county, except, perhaps, in the extreme southwest, the water is uniformly soft, and pleasant to the taste.

Considerable deposits of iron ore are found in the middle and western portions of the county, but whether the quantity or richness of the ore would justify any farther attention in that direction, can only be determined by a competent judge.

The Census returns for Juneau County for the year 1860 report but one death to 174½ of the inhabitants; showing conclusively that as to health this county stands equal to any other portion of the State.

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INDUSTRY OF KENOSHA COUNTY.

BY J. M. LELAND, OF BRISTOL.

However small on the great map of the State, we feel that Kenosha has interests as great politically, commercially and agriculturally, as any other county in the State, Located on Lake Michigan, our facilities for progress in all that pertains to a progressive people are unsurpassed.

TOPOGRAPHY.—The surface of the county is neither level nor hilly, but gently undulating. The relative proportion of timber land and prairie, I should judge to be about as one to eight. Originally the proportion of timber to prairie was some larger, but as emigration increased more or less of the timber has vanished. The face of the country is considerably cut up with sloughs of greater or smaller size, yet the most of them are available as meadow or pasture land, and of course would not be counted as waste land. There are, however, some of the sloughs which may never be brought into a state of cultivation, but the relative proportion is quite small. Our prairies, with the exception of Pleasant Prairie, are not large, but are conveniently and beautifully interspersed with timber. There are, however, three belts of timber running through the county from the north to the south. One is on the shore of Lake Michigan, another lies along the O'Plain river, and the third is on the borders of the Little Fox river. The timber is principally of oak, (including the different varieties) with the exception of the north-east portion of the county. There, in what are called the Pike woods, we find nearly all of the different varieties, such as maple, beech, basswood, elm, &c., &c. Some hickory is found throughout our county. A few patches of the tamarac are to be found on some of the low grounds, and also some red cedar forms a border upon our little lakes. Upon a part of the school section in the town of Bristol, are found some large and excellent black walnut trees. White, red, black, and burr oaks prevail to a large extent.

Besides our ten or twelve small lakes, we have the great Lake Michigan on the east, and with the addition of two

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rivers and several little streams, we are tolerably well watered. The Fox river is quite an important stream, and though not one of the most rapid, is capable of driving considerable machinery. It is navigable as far as Wilmot for small craft. The O'Plain river does not afford sufficient head nor fall for milling purposes. It is a sluggish stream, but obtains considerable size as it reaches the Illinois river. Water for household purposes, and of excellent quality, is obtained at a reasonable depth, and valuable springs are found in some localities.

Quarry-stone, I believe, is not found to any extent sufficient for building purposes. The same may be said of stone for lime. Our lime is mostly obtained from or near Racine. The boulder or cobble stone is found in most sections — at some places in great abundance, while at others it is scarce or not to be found at all. Brick of an excellent quality are made at Kenosha, both for the home trade and export. The quality is the same as the celebrated Milwaukee brick.

IMPROVEMENTS.—The county is fast being improved, at leas such land as will admit of cultivation. Drains are being constructed on the low lands in order to carry off still or surplus water. Fences are being built, and old ones repaired, and lastly, though not least, people are feeling the necessity of better buildings for them and to shelter their stock and crops from the tempest. Within the past ten years many fine and valuable dwellings have been erected all over the county, showing positively that we are prospering in the right course. The old pioneer houses are fast giving way before the march of improvement. Substantial and convenient barns and other outbuildings are taking the place of hovels and straw sheds. Indeed, improvement is the order of the times, and there will be no stop to it, though there may be times when it will be slow. The fencing of the county is a subject which is attracting the attention of the people not a little. Rail timber is about used up; boards are expensive, but probably the only alternative. Hedges do not thrive as anticipated by some, and where shall we look for something cheap, and at the same time durable.

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The most of our fields are too large if we are to keep what stock might be kept aside from raising grain. The individual who shall make the wished for discovery, of a satisfactory hedge plant, will be entitled to the lasting gratitude of the present and future generations.

AGRICULTURE.—As a people we are devoted mostly to agriculture. The soil will vie in productiveness with that of any other district of equal size in the State. It is principally a black soil, with a small proportion of sand, though we can boast of all the ordinary varieties of soil within our boundaries—sand, gravel, clay, loam, muck &c., &c. Wheat is the great staple; among the varieties are Canada Club, Fife, Rio Grande, Black Sea, &c., and lately there has been introduced a variety called China Tea. From the information I can get about it, it is thought to be an excellent kind of wheat. Black Sea is but little raised at present. The first two varieties appear to take the lead with farmers here. Spring barley is raised to a considerable extent, but is rather an uncertain crop. When the season is right for it, it produces largely. I am not aware that winter barley has been introduced as yet. Oats, too, are largely cultivated, and generally yield abundant crops. Corn likewise, is considerably raised, but not so much for shipment as for home consumption, except it be in the shape of pork or beef. It does well here generally.

Potatoes likewise constitute one of our great productions.

Flax has heretofore been raised to some extent, but for some cause but little, if any, is at present raised. It is my opinion that it is not a remunerative crop; not because the soil is not adapted to its growth, but because of the lack of a home market for both the seed and straw. Tobacco has been cultivated here, and good crops obtained, but it is now abandoned for some cause. Sorghum has been cultivated to a considerable extent, and is considered a paying crop by those who have raised it extensively.

All garden vegetables flourish exceedingly, and are raised to quite an extent.

Most of the soils of this county are well adapted to the

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growth of grass. Timothy or herds grass grows luxuriantly, and makes an excellent kind of fodder. Clovers, both red and white, feel the effects of our rich soils and plentiful dews, and well repay the husbandman for all his outlay. Large crops of hay are, or might be raised, if farmers would turn their attention more to the raising of stock.

The subject of fruit, or the adaptation of our climate to its growth, needs a more extended discussion than can be given to it in this paper. We do, however, raise some excellent fruit, and by far the best show was made at our Fair the past season that has ever been made. Most orchards in this vicinity do not do so well as in some other sections. The trees are not healthy, thrifty, growing ones. Many have lost and are still losing their trees, for some unaccountable cause. The bark louse is one great drawback to their thrifty growth. The prospect in this region for producing fruits of different kinds looks dubious in the extreme.

Within the last decade there has been a marked advance in the improvement of blooded stock. Of cattle, Durham blood I think has taken the preference. Some Devons have been introduced, and are very well liked in some respects. I am not aware that any other particular breeds have been introduced as yet. The fattening of beef cattle engages the attention of but a few of the farmers, and probably but a small share of those fattened find their way to an eastern market, as the local wants are nearly equal to the production.

Some attention is paid to the dairy business, but on a limited scale. There are no extensive dairies in the county.

The attention of farmers is a good deal interested in the raising and breeding of good horses, both for the farm and roadsters. I think it safe to say that this county will not suffer in comparison with any part of the State in that respect. We have generally obtained our share of premiums at State Fairs for good and serviceable horses. Morgans, Black Hawks, Messengers, &c., make up the stock of the county. Some sporting or fast horses may also be found within our limits, and are said to compare favorably with their competitors.

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Sheep, for both wool and mutton, are raised to quite an extent. Some excellent flocks are owned within the county. The principal breeds are the French and Spanish Merinos; then follow their crosses. Southdowns are raised but little, as also are the coarser breeds. This county is able to produce more wool and mutton by far than it does at present, but the accursed enemies of sheep (dogs) operate as one of the great drawbacks to the business. There is not a manufactory of woolen goods within the county, but there is one wool-carding establishment in the little town of Wilmot.

But little attention is given to the raising of swine, but what we have are good and profitable for us. The race of "third-row hogs" and blue racers is run out here, and better ones have taken their place. Farmers find it more profitable to keep their hogs all the time a-fattening.

MANUFACTURING.—Our county cannot be called a manufacturing one, though something is done in that direction. Two flouring mills comprise all that is done in that branch; two mills heretofore in operation now being at rest. Wagons in large numbers are here made and sent into different parts of this State and Illinois. Plows, likewise, are made at several places. Stoves, washing machines, sash, doors, blinds, boots, shoes, harnesses, friction matches, fanning mills and wooden pumps, are all manufactured in Kenosha City, some of them quite extensively. There are also several foundries and machine shops located here. A very large business is done in the manufacture of the celebrated thimble skeins for wagons. A planing machine for dressing lumber, siding, flooring, &c., is doing an extensive business. The manufacture of barrels, butter firkins, &c., forms another important branch of industry. Tin and sheet iron ware is made here by two large establishments. A large tannery is located here in the city of Kenosha, which is doing a large business in manufacturing leather; the quality of which is not surpassed, probably, in the State.

COMMERCIAL ADVANTAGES.—Of the city of Kenosha as a point of commercial importance, Alex. C. Triming, Chief Engineer of the Kenosha, Rockford & Rock Island R. R. Co., in

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his report for 1853, says: "The harbor of Kenosha is improvable for the accommodation of shipping to any amount that can be required. Its ample basin is embosomed in the city without obstructing its streets materially; and, with an ample depth of water, opens naturally, both north and south, by a broad passage, offering nearly a mile of front along the main shore, and sheltered, for that extent, by what was originally an island, but is now a peninsula, yet susceptible of being easily restored to its insular condition." What was true then is even more so now, for it has been considerably improved since that date, and is constantly undergoing still further improvement.

The lumber trade of this port is carried on extensively by several enterprising individuals. It is mostly composed of pine lumber, though considerable is imported for the purpose of converting it into wagons, and some other articles requiring hard wood. All kinds of hard wood here find a ready sale at fair prices. Several vessels here find constant employment during the season of navigation in this important branch of commerce. (See census reports for statistics.) It is confidently believed that when our western railroad is completed to Harvard or Rockford the commercial business will be greatly enhanced. Large quantities of lumber must here centre to supply the interior consumption, which is constantly on the increase. Instead of going around by Chicago, a long, circuitous, and expensive route, it will naturally take the nearest and most direct route, which is along the line of the Kenosha, Rockford & Rock Island Railroad.

Another and growing branch of industry is conducted at this port; that of the white fishery. It is considered one of the best fisheries on the lake. Large amounts are annually taken and salted, and shipped to different parts of the country.

Better docks, capacious warehouses, elevators, &c., are being added, and other evidences of commercial thrift are increasing from year to year.

The Kenosha, Rockford & Rock Island R. R. opens to this port the great grain trade of interior Southern Wisconsin and Northern Illinois, and by means of side tracks communicating

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directly with the ship landings and warehouses, affords facilities for cheap handling and economical transportation generally.—The Lake Shore Road, connecting Milwaukee and Chicago, renders communication with these two important cities easy and cheap as well as direct, and adds considerably to the commercial importance of Kenosha.

THE KENOSHA COUNTY AGRICULTURAL SOCIETY was one of the first organized in the State, and has accomplished a great deal of good. The Fair is located permanently near the centre of the county, on grounds belonging to the Society, and is almost invariably successful. A large exhibition hall and a fine new tent have been recently provided, and must serve as additional inducements to exhibitors on future occasions.

INDUSTRY OF LA FAYETTE COUNTY.

BY HENRY S. MAGOON, OF SHULLSBURGH.

The County of La Fayette, once a part of Iowa County, was separated therefrom and organized by the Territorial Legislature, February 4, 1847. Lying on the southern border of the State, bounded on the north by Iowa County, on the east by Green, on the south by Jo Daviess County, Illinois, and on the west by Grant, it measures thirty miles in length by twenty-one in breadth. It is divided into fifteen towns; the towns of Argyle, Fayette, Willow Springs and Belmont comprising the northern tier; the towns of Wiota, Gratiot, Center, Shullsburgh and Elk Grove the middle tier; while Wayne, Monticello, White Oak Springs, New Diggings and Benton lie along the south. The county was first permanently settled A. D. 1826; and here the Territorial Legislature of Wisconsin held their first session at Belmont, October 25, 1836. The population of the county in 1847 numbered 9,335; in 1850, 11,531; in 1855, 16,064; in 1860, 17,858; exhibiting a slow but healthy progress.

The county contains six hundred and thirty sections, or 403,200 acres of land. The general surface is beautifully undulating, unmarred by cliffs or many steep hills, while of swamps,

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marshes and waste lands, there are none. The southern and western parts of the county, embracing two-thirds of the whole, are prairie, dotted with occasional clusters of timber; while the remaining one-third is wood-land, somewhat more hilly than the prairie sections. The west branch of the Pecatonica river, affording abundant water privileges for mills and manufacturing purposes, runs south-easterly through the center, and unites near Green County with the east branch of the Pecatonica, which with like advantages, runs through the eastern towns, belted with heavy groves of timber. Besides these streams, the head waters of Galena river, presenting superior mill sites, diversify the south-west, and altogether making the county as well watered as could be desired. All these waters and the numerous springs and brooks, are uniformly sweet, crystal and healthy.

The soil is a black, calcareous loam, with a silicious admixture and a sub-soil of clay; dry, and exceedingly fertile. There are places where a clayey, or a sandy soil abounds, but these occupy only a trifling portion of the surface. The soil is excellently adapted for all northern grains, especially wheat, oats and potatoes; while fruits, flax and barley, have been cultivated with success. In short, no equal body of land in the State, surpasses either in the quality, beauty, fertility, health, or natural advantages, the county of La Fayette.

Three-fourths of the population are engaged in agriculture, and one-fourth in mining and other industrial pursuits. The amount of land under tillage cannot be far from 70,000 acres, —somewhat more than one-sixth of the whole. The staple products are wheat, corn, oats and potatoes; with considerable quantities of buckwheat, flax and barley. Garden vegetables of all kinds are abundant. Sorghum is little cultivated; but the fruit crops for 1860 amounted to not less than 4,500 bushels of apples, with some peaches, pears and plums. Sixty barrels of cider, the first ever made in the county, were made at Shullsburgh, this year,—the farmers in the vicinity furnishing the fruit. Currants, grapes, strawberries and gooseberries have also begun to receive attention, and so far have not only

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produced well, but given lively encouragement for their general cultivation. In brief, the agricultural interests of this county are prosperous, brightened by many evidences of progress, and cheered by omens of more advancement in the future.

To give an authentic or proper account of the past agriculture of this county, would require the toil of many days, and the resources of an able pen. It is a task too difficult to be attempted here. The following table, however, which I have been at much pains to make authentic by careful examination of official records, will show the number of acres, and the valuation of real and personal estate, as assessed, in this county, since its organization.

	Acres.	Valuation.	Personal Property.	Total.
1847	162,830	$ 545,596	$ 33,454	$ 579,050
1848	.....	606,096	4,360	610,456
1849	.....	946,489	178,756	1,125,245
1850	.....	840,115	93,539	933,654
1851	.....	844,366	92,336	936,702
1852	.....	824,777	95,797	920,574
1853	284,890	947,392	132,277	1,079,669
1854	339,247	1,133,585	196,083	1,329,668
1855	387,998	1,290,945	172,491	1,463,436
1856	389,334	1,409,773	178,012	1,587,785
1857	397,227	1,516,428	201,734	1,718,162
1858	398,613	2,660,249	186,247	2,846,489
1859	399,340	2,739,770	324,499	3,064,269
1860	399,458	2,740,277	553,099	3,293,376

From this table, it will be seen, that personal and real property have largely increased in value, the last twelve years. This increase belongs almost entirely to the Agricultural department; for the mining interests have much decreased during the same period. Notice the decrease of valuation from 1849 to 1853, in the above table, and you will then have observed the period of that unprecedented emigration to California, which nearly depopulated portions of the county, and drew off one-third of the whole mining force. To supply this great loss, and to replace the removed values, has been the work and success of the farming community.

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Below we give a statement showing the amount of the staple products of the county, for the years 1850, 1857 and 1860:

	Wheat. bushels.	Corn. bushels.	Oats. bushels.	Potatoes. bushels.	Butter. pounds.	Lead. pounds.
1850.....	63,283	91,491	175,851	18,804	67,295	8,170,000
1857.....	262,547	327,705	320,112	81,917	273,381	6,673,000
1860.....	628,136	749,964	759,924	190,778	281,846	.....

Prior to 1850, the larger part of the population were engaged in mining. The mineral lands having been reserved from sale by the general government up to 1847, and low rents meanwhile being charged, and great privileges allowed by claimants, "prospecting" and digging for the ore were the rage, the pursuit of the masses, and farming mostly neglected or disdained. After the land sales in 1847, times changed. The purchasers of lands soon curbed indiscriminate "prospecting," and this compelled hundreds of brave and hardy miners to seek other fields of employment. Many joined the army, in the Mexican war, and far off in the gorges of Buena Vista, and under the walls of Mexico, fell with their feet to the foe, or never returned; and others, by hundreds, in 1849, '50, '51 and '52, sought richer mines and new openings for adventure among the distant mountains of California. Still later, the wonderful stories of gold in Australia, at Frazier River and Pike's Peak, have reduced our mining population to one-half its former aggregate. Thus one Augustan age of mining in this county has passed away. Gallant boys of 1847! Hearts of gold, each true as the sun! hail, and forever farewell.

Present mining in this county is, with few exceptions, carried on by companies. Surface digging and "prospecting" have been replaced by deeper mining and the use of machinery. To get down to the mineral, "shafts" are sunk to various depths; and below, whenever desired, horizontal "drifts" or channels are dug, sometimes to a distance of several hundred feet. The richest deposits now working, lie at a depth ranging from sixty to one hundred feet below the surface. The miner drains off the water by means of horse-power pumps or by levels. The ore, when raised, is hauled to a furnace and

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there "smelted," whereby the pure lead is separated from the foreign substances. There are four lead furnaces in the county, all actively at work, each of which smelts from one to three millions of pounds of lead ore per year. 1,000 pounds of lead ore, when smelted, produce about 700 pounds of pure lead, and the price of the latter generally varies from five to six dollars per hundred. A number of valuable "lodes," or heavy deposits of mineral, are now working in the county, and the mines bid fair to resume, before long, their ancient prosperity. One company, James Davenport & Co., at Shullsburg, have taken out from one "lode" during 1860, about 1,200,000 pounds of ore, valued at $39,000. This "lode" is one of the largest ever discovered in the North-west, and will probably require five years, some say twenty years, to work it out. The aggregate amount of mineral raised in the whole county, during 1860, is about 9,538,000 pounds, valued at $305,000. Enough has already been done and developed to prove the mineral resources of La Fayette County, to be unexcelled by any in the State, and of a richness to sustain and reward the miner for ages. Let the traveler and the seeker of a home, visit this county. Let them survey the extreme beauty of its natural features; the many evidences of its agricultural wealth and industrial progress; nor fail to explore the mines, where, far down beneath the surface, unexpected wonders will greet them, and amply reward the trouble of a long journey.

INDUSTRY OF MANITOWOC COUNTY.

BY CHAS. ESSLINGER, OF MANITOWOC.

This county is situated in the north-east part of the State, adjoined by Kewaunee and Brown on the north, Calumet on the west, Sheboygan on the south, and Lake Michigan on the east, and lies on about 44° 36′ of north latitude. The climate in winter is cold and bracing; seldom intensely cold but for from 24 to 48 hours at one time. In summer the air is cooled by

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pleasant lake breezes, and at *all* times the atmosphere is pure and healthy.

Near the lake shore the soil is light, intermingled with a sandy loam; farther back from shore it is heavy and well adapted to agricultural purposes.

The county is well timbered, chiefly with hard wood, as beech, maple, white and red oak, &c., except along the margin of the principal streams, where a fine growth of valuable pine predominates; and the low land and swamps contain a fine growth of cedar, tamarac and black ash.

The principal stream is the Manitowoc river, which is formed of two branches, both of which rise in Calumet County near Lake Winnebago, uniting their waters some 20 miles west of Manitowoc, and receiving a large tributary stream some eight miles north-west of this point, and emptying into Lake Michigan at Manitowoc. At this point the river is 300 feet wide, near the mouth from dock to dock. Farther back it is wider, and within the incorporated limits of the village there is a large natural basin, capable of accommodating a small naval fleet. As far back as the village of Manitowoc Rapids, some two and a half miles from the lake, the river is navigable for large vessels or steamers; beyond this point it is not valuable for navigation, being occupied by numerous mills for the manufacture of flour and lumber. At Two Rivers, six miles north of Manitowoc, there are two fine streams, as indicated by the name of the town. These rivers are of great value to the lumbering interests in the northern portion of the county; they have their confluence at Two Rivers, and are navigable for vessels some distance back. The Neshoto Lumber Company runs a large steam tug on one of these, for towing their heavy lumber rafts. The entire county is exceedingly well supplied with streams both for manufacturing and other purposes, and the agricultural districts abound in numerous springs of the purest water, and are beautified with innumerable small lakes.

As to minerals, but few discoveries have yet been made.—Some indications of copper and iron have been discovered, but nothing to warrant extensive exploration. One discovery,

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however, has been made in this line, which is likely to prove valuable to the owner and to the public. We refer to the extensive marble quarry of Thos. N. Baker, on the Manitowoc river, four miles west of Manitowoc. The quarry is apparently inexhaustible, and produces a very fine quality of marble, which when finished exhibits a beautifully smooth and polished surface. For building purposes it is regarded as quite superior to anything ever discovered in the West, and has been pronounced by competent judges as excelling the far famed Vermont marble.

The early history of Manitowoc County is identified chiefly with the manufacture of lumber, but latterly its agricultural resources have been wonderfully developed. During the present season up to the close of navigation, over 200,000 bushels of wheat will have been exported, besides a corresponding proportion of other grains and agricultural products; and this amount, it is safe to say, will not include half the productions of the year. The soil is capable of producing a fine quality of wheat, and the brands of flour that have already been shipped to Eastern markets have created a demand for Manitowoc flour. Also the growing of fruit, has been for the last few years most successful, and the fine specimens of apples, of different kinds; delicious pears, plums and grape wine, exhibited at the last County Fair, cannot be excelled by any locality of this State, and gave evidence that soil and climate are well adapted.

The county contains, according to the census of 1860, 22,405 inhabitants, representing about nine or ten nationalities, of which the Germans have the greatest number. They are all a thriving, persevering class of people, accustomed to agricultural pursuits in their native countries, and are bringing the county forward in this respect with remarkable rapidity.

The principal villages are Manitowoc and Two Rivers, both situated, as before stated, on Lake Michigan.

Manitowoc contains 4,000 inhabitants, and is beautifully located on both sides of the river, on a deep bay of the Lake. It is the county seat, and a fine trading and shipping point.

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It has three steam lumber mills, two flouring mills, and is chiefly supported by the rich farming country adjacent. The village has become somewhat distinguished for its shipping. Quite a fleet of vessels is owned here, and in the course of the year their commercial transactions amount to a large figure, by their regular trading to the ports of Milwaukee, Chicago, Buffalo and other points. During the past few years, some very fine vessels have been built here, and during the past season a fine first class propellor, of 400 tons burthen, and a splendid first class steamer, of 350 tons burthen, were built.

Two Rivers is quite a manufacturing town. It has two heavy lumbering establishments, a pail and a furniture factory; and about two miles north-west of the village, on the North Twin River, is located the extensive manufacturing establishment of the Wisconsin Leather Company, one of the greatest establishments of the kind in the Country.

Both villages, Manitowoc and Two Rivers, during the season of navigation, are connected with Milwaukee and other ports by a daily line of steamboats, owned by Capt. A. E. Goodrich, of Chicago, which will leave Manitowoc every morning at 8 o'clock.

INDUSTRY OF OUTAGAMIE COUNTY.

BY PROF. R. Z. MASON, LAWRENCE UNIVERSITY, APPLETON.

The area of Outagamie County is sixteen townships. It is situated in the belt of hardwood timber land lying between the openings and prairies of the southern part of the State, and the pines and other evergreens of the north. The surface, as in almost every other part of the State, is either level or undulating—heavily timbered and well-watered. The lower Fox cuts the south-eastern corner of the county, furnishing, by the aid of the Wisconsin and Fox River Improvement Co., a ready and direct outlet to the Eastern markets by Green Bay. The Wolf, entering the county on the north side, and descending

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nearly to its centre, finally leaves it on the west at New London. These two principal streams are accompanied by numerous tributaries, flowing through every part of the county. The prevalent kinds of timber are three varieties of oak, two of hickory, two of maple, three of elm, three of ash, one each of poplar, beach, basswood, and iron-wood; besides others are occasionally found peculiar to the same latitude, climate and soil.

The soil for the most part is a black loam, with a sub-stratum of stiff, compact, adhesive clay. The rock, a variety of the upper magnesian limestone, is reached only at great depths, except in a few localities where it outcrops and is easily quarried, furnishing abundance of building material. Much of the land is rated and sold by the State as *swamps*, but embracing, no doubt, some of the best, deepest and most serviceable soils in the West. The same expense used in clearing and draining these low lands, which is now applied in simply clearing the lands covered with heavy timber, will render the swamp lands of Wisconsin, for any practical agricultural use, superior to any lands in the State. Nor is the day distant when the hardy settler will fully appreciate this fact.

Such, in brief, are the principal physical features of a county which received its first white inhabitant not more than twelve years ago, but which now embraces within its borders a young city of 3,000 people, and a total population of some 10,000.

Agriculture is of course destined to be the great interest of the county at large, but manufactures, as a branch of human industry, must ultimately engage an immense outlay of capital and labor, at a point so advantageously situated as is Appleton. There two thousand wheels can be kept revolving by the falling waters of the Fox, with no interruption throughout the year. The amount of business now done on this unrivalled water-power is as follows: Paper manufactured $25,000; wagons and materials $18,000; lumber $10,000; staves and barrels $40,000; building $5,000; flour $600,000; chairs $3,000; rakes $5,000; iron $7,000; miscellaneous $8,000.

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The Agricultural statistics of a few staples for the year 1859, a year second only to 1858, for deficient crops, are as follows: Butter 166,163 lbs., cheese 4,060 lbs., hay 7,789 tons, maple sugar 144,382 lbs., wheat 89,070 bush., rye 4,995 bush., corn 43,475 bush., oats 54,744 bush. The amount of improved land is 32,270 acres, or less than one-tenth of the entire surface of the county.

The above is not regarded by competent judges as a fair exhibit of the agricultural resources of the county. For instance, the wheat crop of 1859 was much below the average. The estimate for 1860, of the same staple, is 300,000 bushels. The corn crop of 1859, on account of repeated frosts, was not half its usual value. Fruit culture has not yet received its due share of attention in this comparatively new region. But every advancing year is witness of the increasing interest felt in the subject by the people at large. No labor or employment of life has a more ennobling and elevating influence on the human soul than this department of horticulture. Whenever the experiment has been faithfully tried by an intelligent man, this is found to be the result. Apples, pears, plums and cherries flourish luxuriantly, while berries of every kind, and the smaller kinds of garden fruit, adapted to this latitude, either grow wild throughout the county or are cultivated at little expense. With proper care and skill, quinces and peaches can be successfully cultivated.

A word on the Meteorology of this part of Wisconsin, and this article must close. By consulting the Smithsonian records kept at Lawrence University, for the past five years, the following facts are ascertained: 1st. The mean annual temperature is a little below 43°. 2d. The amount of rain and melted snow is about 30 inches per annum; one year falling to 23 inches, and another rising to 36 inches. The mean height of barometer is a trifle below 29 inches, say 28.98 inches, giving us an altitude above the sea level of about 800 feet. The coldest month during that period was January, 1856. Mean temperature for the month, 6°. Coldest day, the 8th; mean temperature for the day was 19°. The lowest point which the

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thermometer has reached during the above five years was 26°. This occurred on the 18th January, 1857. The highest was 96°. Prevalent winds are from south-west. Rain usually from north-east or south-east.

INDUSTRY OF OZAUKEE COUNTY.

BY JULIUS TOMLINSON, OF PORT WASHINGTON.

The land in this county is all timber land, yet the growth is not large when compared with the finest growth of western N. Y. It consists of white and red oak, maple, hickory, beech, white ash, basswood, ironwood, &c., upon the uplands, and black ash, elms, tamarac and cedar upon the lowlands. Some bitternut, slippery elm, wild plum and grape are also found in many localities.

Wild raspberries, blackberries, strawberries, and in some places cranberries, are very abundant.

The surface of the soil is rolling, more level in the eastern part along the lake, and quite hilly in the western part.

The soil is clay, mixed with lime gravel, although the proportion in which each component is found varies considerably. In the eastern part the clay greatly predominates, and in the western part the gravel. There are localities, however, which are more sandy; yet I think on the whole that clay and gravel are the chief constituents of the soil. In the immediate valley of the Milwaukee river the soil is a light loam, with a gravel subsoil. As near as I can judge, about one-eighth of the county is low and swampy, but there are few of our lowlands that cannot be drained and made productive.

A ledge of limestone runs through the county from north-east to south-west. It is seen on the shore of the lake about three and a half miles north of Port Washington, and crops out in two places in the same town where it is crossed by Sauk creek, and also where the Milwaukee river crosses it at Grafton, and where it is crossed by Cedar creek at Cedarburg.

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It also comes to the surface in Cedarburg. It affords abundant and excellent material for building.

About one-fourth of the county is under cultivation. The proportion of cultivated to the timber lands varies considerably in the different towns. In the town of Megwon, I should judge that five-eighths to three-fourths of the land is cleared; probably at least one-half in Belgium; while Saukville and Fredonia are not one-eighth cleared land.

The chief branch of agriculture in this county is the raising of grain,—of which wheat and rye are the leading varieties. The soil is well adapted to wheat, both winter and spring, but the raising of winter wheat is confined to new lands, mostly; as for a few years back, it has been badly winter killed, for want of snow to cover it in the winter. Spring wheat does remarkably well. It is much plumper and has a thinner bran than much of the same kind grown in other parts of the State. Large quantities of all the cereals are raised, with the exception of corn.

Our farmers have not yet paid that attention to stock which they should have done. Some fine animals may be seen, however, among the wealthy farmers in Cedarburg and Megwon, and a few perhaps in other towns. The Ozaukee County Agricultural Society is awakening a spirit of emulation among our farmers, and but few years must elapse before we can show as good stock as any in the State.

As our county is yet young, comparatively, there is but little, if any, of what is termed, in older localities, *high farming*.

There is a commendable interest now evinced by many in our county in the matter of fruit. For several years it was supposed that fruit would not grow here, at any rate would not thrive so as to make it profitable to raise it. This illusion is fast vanishing. I have never seen a better show of fruit than at our County Fair at Cedarburg. Apples, pears and plums especially, were very fine. Plums thrive here remarkably well. The practice is to transplant the wild stock and graft in the improved varieties. Grapes also do very well.

In the matter of farm buildings much cannot be expected

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from so new a county; yet the log house and barn are fast being replaced by more substantial structures. The material for building here is cheap and abundant. At Port Washington there are two brickyards, which turn out the cream-colored brick of a better quality even than that of Milwaukee. There is also a brickyard at Cedarburg. These, together with our stone quarries, and forests of all kinds of timber, except pine, furnish us with all that is necessary for elegant and substantial buildings. There are eight grist and flouring mills in this county, having in the aggregate about 20 run of stone. There is also one pearl-barley mill. Not less than 200,000 bushels of grain is ground up annually, and not less than 20,000 bbls. of flour is exported from the county yearly. There are bedstead and chair factories at Grafton and Saukville, and a smut machine factory at Port Washington. There is also a foundry and machine shop, and several shook shops in the last-named town, and the usual number of wagon, blacksmith and carpenter shops, all of which must turn out many thousand dollars' worth of manufactures annually. The shook and stave business amounts to about $25,000 annually, and the last year there has been not less than 40,000 cords of wood shipped from the county.

INDUSTRY OF PIERCE COUNTY.

BY DR. O. T. MAXSON, OF PRESCOTT.

PIERCE COUNTY is yet in its infancy, dating back but six years to its organization. The early pioneer had found his way here a little earlier.

The important feature in the development of the county up to this time, consists in its agricultural productions; which is the history of all new countries where the soil enters chiefly into the importance of the locality. Up to 1859, no wheat had been shipped down the river; a few thousand bushels in all had been furnished the pioneer settlers of Minnesota and

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the lumbermen of the St. Croix and Mississippi; 1860 is the first year in which we have raised a full supply of pork and beef.

The county contains about six hundred square miles, and has a water front on the Mississippi and St. Croix of fifty miles. The west half is composed of rolling prairie and burr oak openings; the east end, with the exception ot a few miles along Lake Pepin, is covered with forest timber, consisting of oak, ash, sugar maple, walnut, butternut, elm, basswood and linn. The prairie is traversed by several streams of sufficient size for milling purposes. The high lands are moderately well supplied with springs, some of which furnish sufficient water for mills. Mr. J. Fuller has one, falling twenty-two feet while crossing his yards, which rises almost at his door-sill. Its volume is about two hundred inches under ten feet pressure. The streams of the county abound in fish, the speckled trout being found in abundance. The timber land is more generally supplied with springs; few quarter sections of which have not a full supply of good spring water.

The Climate has been much discussed by persons desirous of emigrating to north-western Wisconsin and Minnesota. The prevailing winds are from the west and south-west, which bring a dry atmosphere from the great plains west of the Missouri and New Mexico. Weeks of cloudless sky, summer and winter, are common. Winter sets in from the middle to the last of November, after which we expect very little mud and rain. The average depth of snow is six to twelve inches, affording about three month's sleighing; the culminating point of winter is about the 20th of February. Plowing is commenced about the 1st of April. There is perhaps no part of the United States where so little time is required to mature grain as in northern Wisconsin and Minnesota. Sowing done in May is harvested in July: making the seed time and harvest within three months. We are very little troubled by early and late frosts.

Soils.—The prairie soil is a black sandy loam, underlaid with clay and lime rock. Near the Mississippi drift is found,

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forming some of the high bluffs which bound that great water. The soil varies from two to five feet in depth. Much of the high land affords a ton to a ton and a-half of good blue-joint hay per acre. The timbered portion has a larger proportion of clay in the formation of the soil. It is a table-land of about two hundred and fifty feet above the Mississippi, and has a flooring of thirty to forty feet of blue limestone, fossil-bearing rocks. Passing down into the prairie, a thin layer of sandstone is found. The flooring of the prairie is composed of magnesian limestone, from which good lime is burned, and building stone obtained.

AGRICULTURE.—Wheat is the staple product. Oats, corn, barley, and other small grains also enter into the list of farm products. As to the quality of grain, I would refer to the exhibition at Milwaukee in 1859, and also to that at Madison in 1860. Average of the land crops was forty, and in some few cases over fifty bushels per acre. Corn is raised to a considerable extent; varieties, King Philip, Dent and Flint, all of which are considered sure, with a moderate yield of forty to sixty bushels per acre.

As there is but little marsh in the county, the farmers depend upon straw and hay raised upon the high lands. Timothy upon deep plowed land yields well and stands the winter; but upon light plowing is liable to winter kill. Upon our prairies we have the "pocket gopher," which is about twice the size of a house rat, and burrows twenty inches to two feet in the ground, throwing up numerous little mounds of sub-soil, on which timothy grass grows so rank as to fall down. From this I conclude that with deep sub-soil plowing, we may expect our prairies to afford a reliable supply of hay.

Of the root crops we are successful with every variety grown in Wisconsin. Potatoes are of a superior quality and the yield large.

FRUIT can hardly be said to have had a trial yet. Mr. D. B. Bailey has done more than any other farmer in this line. He has raised apples for two or three years. Other farmers have met with like success. One-half of the trees set in the

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county have died. I have a flourishing Clinton grape from the garden of Simeon Mills, of Madison, which has borne full for the past five years without taking from the frame in winter. Wild grapes, plums and berries abound.

MANUFACTURING is in its infancy, but there is a large supply of water power-waiting to be used. Prescott, the County Seat and principal town of the county, has eight steam mills, six of which are for lumber.

EXPORTS.—The following table of the exports of the county for the year 1860 has been carefully compiled from the warehouse books at Prescott, including grain estimated on hand April 1st, 1861; all the grain of the county being shipped at that place.

Wheat, bushels,	.....	300,000,	average	price	paid	70	cents, ...	$210,000
Corn, "	.....	50,000,	"	"	"	25	"	12,500
Barley, "	.....	25,000,	"	"	"	40	"	10,000
Oats, "	.....	250,000,	"	"	"	20	"	50,000
Pork, pounds,	.....	224,000,	"	"	"	5	"	11,200
Total,								$298,700

Our population was 4,677 by the late U. S. census; from which it appears the above sum allows $62 as the average for every man, woman and child in the county. There were ten thousand acres of land broken during the past year.

Pierce has a County Agricultural Society, dating back two years; at its first gathering, Prof. Hoyt of Madison, addressed the Society; since which time they have taken the PRIZE BANNER offered by the citizens of Madison through the State Agricultural Society. I believe the county is also the banner county in the number of *Wisconsin Farmers* taken, in proportion to the population; and I am informed that the same is true as to the *Journal of Education;* this speaks well for the intelligence of the people.

Owing to the several railroads touching the Mississippi, all competing for the carrying trade, we go to Milwaukee and Chicago at the same price that towns one hundred miles from either place do. Most of the crop of 1860 was taken to Milwaukee at nine cents per bushel from Prescott.

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INDUSTRY OF RICHLAND COUNTY.

BY J. WALWORTH, OF RICHLAND CENTRE.

Richland contains a greater variety of soil than most counties. The Southern portions, along the Wisconsin River, and for several miles back, is a sand prairie, some parts of which are thin, light and unproductive; other portions have been found to produce well, with proper and timely culture.

About three-fourths of the county is heavily timbered with a general variety of oak, ash, white walnut, linn, hickory and elm, interspersed with large forests of hard and soft maple, from which a considerable quantity of sugar is annually manufactured. The remainder of the land is what is called loams, but is well adapted to wheat growing. The soil of the timbered land is of a very superior quality, and is admirably adapted to the growth of corn, oats and grass. The face of the country is uneven, consisting of ridges and valleys, the ridges often terminating near the streams in precipitous bluffs. Some of these in the Southern part are nearly destitute of timber, but in the Northern part the hills and bluffs are covered to their summits with a heavy growth of excellent timber, and the soil is good.

Notwithstanding the soil produces well all kinds of grain, yet from the peculiar face of the country and nature of the soil, its principal and most natural product is the grasses of various kinds, and hence it may be regarded as one of the best stock growing counties in the Sate; and though it is yet comparatively new, and its improvements limited, its superior advantages for grazing have been satisfactorily developed.

This county is well watered with numerous springs and beautiful brooks of pure water, most of which are well supplied with speckled trout — evidence of pure water and a healthy climate. Many large and fine farms are now opened, and under excellent cultivation, particularly in the towns of Buena Vista, Ithaca, Richland, Richwood, &c., in which improvements were first commenced. In the heavily timbered lands, large and fine farms may be seen, yielding a handsome remunera-

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tion to their owners. Few, if any, counties in the State contain as fine, well cultivated and well watered farms as the Bear Creek and Wilson Creek Valleys.

As the county is generally new, there have not probably been very thorough or systematic efforts made for the cultivation of fruit; but as far as the trial has been made with the hardier and acclimated species, the result has generally been satisfactory. The principal fruits which seem natural to the soil and climate are the currant, grape, raspberry and strawberry, all of which do well here, but particularly the grape, which grows spontaneously in our forests in abundance.

Little pains, I believe, has ever been taken to ascertain the geological character of the rock strata which underlie this entire region of country, and are often seen cropping out of the bluffs often a hundred feet above the land of the valley around them. These rocks show indications of the action of water upon their surfaces at some remote period. There are less indications of volcanic action in this section than in several counties farther south. The rocks in the bluffs are generally of a species of hard sandstone, in many instances a hundred feet in depth. There are, however, occasional layers of limestone interspersed along the bluffs. Hydraulic power is abundant in this county. The Pine river, so named from several fine groves of pine timber growing near it, Bear creek, Willow and Mill creeks, which seem to have been located at convenient and necessary intervals, afford a sufficient power, at least for many years to come.

In former years large quantities of the ginseng root were dug from the rich timber lands in this county, and at one time constituted its principal export; but within the last two or three years less attention has been given to this trade in consequence of a falling off of the price, though much of it is yet here and can be obtained with little labor or investment. In the year 1857 it was estimated that from seventy to eighty thousand dollars worth of ginseng was sent to China from this county alone.

The principal villages are Lone Rock, the present depot for

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the county and outlet for its produce upon the Milwaukee & Mississippi R. R., Richland City, Onion and Port Andrew upon the river, Sextonville, Richland Centre the county seat, in the centre, and in the northern part Rockbridge, Woodstock, Loyd, Cazenovia, Neptune, Spring Valley, Viola, Boaz, and some others, which bid fair to become thriving country towns, and centres of considerable business.

According to the late census, we have about 9,710 inhabitants, which for the time since the commencement of its settlement, and the financial embarrassments of the country generally, shows a more rapid increase than could have been expected.

The county Agricultural Fairs have been well attended since the organization of the Society, and the exhibition in products, stock, and manufactured articles, was very creditable in quantity and quality; showing a good degree of enterprise and intelligence in the farmers and mechanics. With that industry and economy characteristic of the pioneers of Wisconsin, we confidently look forward to a degree of improvement and independence in our circumstances which are the legitimate fruits of health, industry and enterprise; and though our progress may be slow, we regard the result as certain and satisfactory.

INDUSTRY OF ROCK COUNTY.

BY DR. A. I. BENNETT, OF BELOIT.

In surveying the pleasing drapery of surface, and in contemplating the numerous advantages presented in the County of Rock, before it was disturbed by human agency, the traveler must have been led to feel that Dame Nature had acted in her blandest and most beneficent mood, while thus lavishiug her gifts to promote the welfare of those who might inherit the boon.

He will have traveled far and seen much of earth, who shall have met with any region of similar extent, which more fully

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combines the elements of wealth, prosperity, and domestic comfort; and I am partial enough to think, that when I shall have attempted to depict it in its brightest colors, the observant stranger, like the Queen of Sheba on another occasion, will be led to exclaim—"The half has not been told."

Manufacturing and agricultural advantages of a superior character—healthfulness of locality equal to the desires of the most timid valitudinarian—a population comparing favorably with almost any average, in enterprise and intelligence—as well as the many other essentials to an independent and prosperous community, are all so happily blended into one admirable whole, that little is left to be desired but the enterprise of man.

Rock river rolls its pellucid waters with a bold and rapid current, from north to south through the central portion of the county, dividing each of the flourishing cities of Janesville and Beloit into two nearly equal portions, and affording at either point a large amount of motive power, for driving mills and other machinery. That immense power has been extensively diverted from its wild waste to purposes of practical utility, and is at this time ministering largely to the comforts of an enterprising and thriving people; but the quickening touch of capital is still required to bring that power into full subserviency to the public weal.

A large number of mills and other manufacturing establishments, are now in successful operation in the city of Janesville and its suburban village of Monterey; thereby furnishing employment to a large number of mechanics and other laboring men, and proving a fruitful source of prosperity and wealth to the city, as well as of comfort and convenience to the people of the surrounding country. But though so much of the power of Rock river has already been made to minister to the wants of man, enough still remains to admit of a profitable and further investment of capital, for manufacturing and mechanical purposes.

And while her sister city has thus drawn liberally upon the bounties of that beautiful river, the city of Beloit has not been

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slow in appropriating a large portion of the power furnished at that point; but further and much larger investment could be made in that direction, so as to be profitable to the capitalist and beneficial to the community.

Possessing the advantages which have been but barely adverted to, and surrounded by a fertile and densely populated country, where all the comforts of life can be easily and readily obtained, these two flourishing cities, favored as they are with educational and religious privileges rarely surpassed, offer homes replete with such enjoyments and attractions to the Eastern emigrant, as have endeared to him the memories of childhood. Indeed, we feel authorized to say to all, of whatever country or clime, we confidently offer such schools and churches as developed your manhood and nurtured your morality, to secure an equal guarantee to those of your offspring whose lot may be cast among us.

Among the waters of Rock County worthy of a special notice, we may mention Turtle creek, which rises in the county of Walworth, and meanders through the south-eastern portion of the county of Rock, discharging its waters into Rock river, in the immediate vicinity of the city of Beloit. While this beautiful stream waters a fine and fertile agricultural region, it also furnishes numerous points at which extensive machinery might be advantageously set in motion; and although a number of flouring mills are now being driven by its waters, the power is by no means exhausted.

The western portion of the county does not present so many advantages for manufacturing, as will be found in the central and eastern portion; but that region is sufficiently watered, by numerous streams of smaller magnitude, to meet the public wants for agricultural pursuits, and to supply the local necessities for milling and other domestic purposes.

It will be seen from the foregoing sketch, that Rock county still offers a fine field for the investment of manufacturing capital and enterprise; and such investment cannot fail to have a beneficial influence upon the interests of agriculture, by furnishing a home demand for the surplus products of her

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teeming soil. Manufacturing and agriculture may there be carried on, in such juxtaposition that the one may become the immediate hand-maid of the other; and we may reasonably hope and confidently trust, that when the capitalist possessing manufacturing proclivities, shall have seen that the North-west possesses superior advantages for the investment of his capital, this county will become as famous for its manufacturing, as it now is for its agricultural pursuits.

The county of Rock, as a whole, consists of a fair proportion of prairie and timber lands; the latter somewhat predominating, and though in some sections the one variety will be found to the exclusion of the other, there is, in the main, such a convenient alternation of each, as to adapt all its parts to agricultural pursuits, with reasonable facility and convenience. The two most extensive prairies in the county, are those known as "Rock" and "Jefferson;" the former of which is mainly, and the latter entirely situated east of Rock river; and it is perhaps, not too much to say, that these prairies are scarcely surpassed in beauty and fertility, by any other region of that great garden of the world, the "Mississippi Valley." And though it may be truly said that the soil is rich and fertile in nearly all portions of the county—being very well adapted to the raising of wheat, corn, barley, &c., &c., including all the grains, grasses and vegetables, suited to this northern latitude—yet its quality and fertility varies, materially, in different localities.

Agricultural improvements and domestic conveniences, are being added from year to year with an increasing ratio; thereby evincing a healthful advancement and laudable ambition, in that most useful of the departments of labor. It is gratifying to perceive, that many of the farmers are beginning to have greater regard to the continued productiveness of their lands, than is usually found to be the case in the early settlement of a country; thereby avoiding the too common error, of killing the goose that lays the golden eggs. The alarm cannot be too loudly sounded in the ears of western farmers, to beware of plundering the future, for the sake of present advantage too dearly purchased.

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Though as a general rule a larger proportion of improvement has been made on the prairie than on the timber lands, yet some of the best and most beautiful farms in the county may be found on those lands originally known as wood land or "openings."

It seems to me, that other things being equal, the openings are better adapted to the raising of wheat, while I am inclined to the opinion that the prairie may bear off the palm in the raising of corn.

As the subsoil of the timber lands is generally of a firmer texture than that of the prairies, it may well be conceived that the former will more easily be kept in a fertile condition than the latter; or, in other words, that with the same kind of farming, a farm in the openings will be more durable than one on the prairie.

Rock County contains but twenty townships of land, inclusive of villages and cities; and though much of that land is unimproved, or but partially improved, more than two millions bushels of wheat, with other grains in proportion, have been produced during the past year, giving some idea of the capacity of her soil, and the enterprise of her people.

As the principal market towns of Rock Connty are situated nearly equidistant from the principal lake shore cities, a choice of market is thereby furnished to the farmer, which, taken in connection with the competition of the various railroad lines, operates greatly to his benefit.

Considerable attention is being given to the raising of horses, sheep and cattle; until the better grades of either may now be found in many portions of the county.

In some sections are extensive natural meadows, not too wet for furnishing large quantities of feed for stock; while the dryer lands are capable of producing wheat, corn or grass, as may be dictated by the taste or advantage of the holder.

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INDUSTRY OF SAUK COUNTY.

BY LEWIS N. WOOD, OF BARABOO.

SAUK COUNTY contains, according to late surveys, about 850 square miles. Its whole population is 18,971, by the present census; the census of 1850 gave 4372.

No tract of land in the State of equal size seems to have a greater share of the natural elements of wealth, nor to have them so equally diversified and spread over the surface. Its rich and varied soil, its timber, its stone, its water and water power, its clays and limestone, its iron ore, its scenery of bluffs, mounds, natural meadows, rivers, lakes, prairies, are such that an unusual number of the industrial pursuits can be pursued here advantageously.

Its topographical features are a very fair representation of those of the whole State at large, so far as timber and prairie, water courses and elevations, diversity of soil and natural productions are concerned; except that its soil for agricultural purposes is better than the general average of the State, and scarcely inferior to the prolific southern counties in the production of wheat, corn and grass. So large a portion of its surface being that kind of soil which naturally produces the varieties of hard timber, wheat of the finest and heaviest quality, and, I may add, in large quantity, also, is readily grown. Up to the 10th day of January, (1861), the "Baraboo Mills" alone, had received on purchase 55,415 bushels.

In addition to this, the very great amount of pork fattened in this county this Fall, and the comparative low price of corn at present, shows the capability of the soil for raising corn. Poor fields of corn have been raised in this county from poor cultivation; but never yet from a failure in the quality of the soil, or from want of natural adaptation to corn.

Oats, too, grown in Sauk county, are known to be heavy, because they grow well in a soil adapted to wheat and corn.

One fact, of which many at first felt doubtful, is now fully established; viz: That the grasses called *tame grasses* do well. Timothy, upon second sowing at least, comes to great perfection

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of quality and quantity upon the heavier soils, while clover does equally well upon the lighter soils. These lighter soils generally, whether of prairie or timbered land, abound in a calcareous composition, rendering them far more productive than the sandy soils in the Eastern States in their natural condition.

Early reports of this county represent it better adapted to dairy and stock than to grain, on account of the natural meadows, technically called "swamp lands." These occupy about one-seventh of the surface, and are found, by ditching and draining, likely to become the most arable land in the county, notwithstanding the hill lands, on account of the calcareous matter in them, are found to be highly productive of the grains and grasses; and the breadth of lands now cultivated shows that the agricultural resources of the county are far better appreciated. The surface of this county was powerfully wrought upon by geological forces during the drift period, though its surface is not mountainous, nor scarcely ruggedly hilly, nor monotonously level; yet many steep bluffs occur, furnishing plenty of good building stone of a silicious character.

The geological position of the county is in the Silurian system, and judging from the fact that fossils are rarely found, if at all, in the underlying sand rock, it is probably low in that system. This rock exhibits evidence in many places of having been acted upon by upheaving forces and heat from below, which have hardened and rendered it vitreous and brittle; yet during the drift epoch many erratic boulders and much calcareous matter was left upon the surface, and this is one great cause of its productiveness in the grains and grassess. Limestone outliers containing fossils, are found in some of the hills; these outliers are the out-cropping points remaining of the abundant limestone rocks in the west part of this State.—Around Spirit Lake (sometimes called Lake of the Hills) the sandstone is finer grained, more colored, and harder than the common sandstone. The rocks are much vitrified by the action of heat at some period, and abound in seggregate veins of quartz, and beautiful quartz crystals have been found.

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Sauk County is, geologically, a mineral region, but its natural resources in this regard are but little developed; though iron ware of excellent quality and of great variety is made at the Ironton Iron Works, by Mr. Tower, from ore found in that vicinity. This and the Sauk City Iron Foundry speak well for our enterprise at this early day in the settlement of the county.

Clay, of the kind from which stone-ware is made, is now wrought for that purpose at Garrisonville, in the vicinity of which are many indications of minerals. Potter's clay and clay suitable for brick are found in many places through the county; likewise limestone of good quality for burnt lime. A limestone is found in the town of Bear Creek of great extent, and of sufficient fineness to be called marble. Stone suitable for building purposes or for fencing abounds in many places. The pillars of the court house were quarried one-half mile from the building, whence the stone for erecting the jail was taken. This quarry is inexhaustible.

Few counties in the State, if any, have timber more equally spread over the surface than Sauk. Oak, in many of its varieties abounds, especially upon the hills; and there is almost an inexhaustible body of timber upon the south side of the Baraboo river, consisting mainly of sugar maple, elm, basswood, oak, cherry, hickory, butternut and ironwood, all growing in majestic luxuriance and covering thickly a space of from five to ten miles wide across the middle of the county.

The principal Rivers are: 1st, The Wisconsin, sweeping around on the north-east, south-east and south, and forming about one half of the entire outline boundary. This river is well known. 2d, The Baraboo river, entering the county near its north-west corner, sweeps meanderingly southward through its centre and passes out at its eastern side. It passes through, or largely cuts over, 50 government sections in its course through the county, furnishing abundance of mill power, especially at its rapids, some two miles in length in the eastern part of the county, with a fall of about 50 feet. This river is the most important stream as a water power in the county, if

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not in the State, and is a beautiful and healthful stream, keeping within its own banks at all stages of flood. Along its banks, in places, there is strikingly varied and romantic scenery. Narrows creek, interlocking its head branches with those of Honey creek in the west, flows north-easterly and joins the Baraboo at Excelsior, near the middle of the county. Honey creek flows south-easterly and joins the Wisconsin in the south part of the town of Prairie du Sac. Dell creek rises in the north, and runs south-east six or seven miles, then turning north-east about the same distance, joins the Wisconsin at Newport. It has good mill power, and runs through remarkable gulches, in which are interesting caves in the sand rock. The whole county is well watered with streams, and many good mill sites remain unoccupied. Among the streams are the Little Baraboo, Otter, Skillet, Pine, Seeley's, Twin, Leach and Big creeks.

The lakes are few and not large. Spirit Lake, about two and a half miles south of Baraboo and one and three-fourths south of the foot of Baraboo Rapids, is a great natural curiosity. It lies embedded in the hills some 400 feet below their surface, with the steep and perpendicular rocks on its east, south and west sides, from the top of which it appears like a horizontal mirror in the bottom of a deep crater, and covers an area of about one square mile. It is said to be about 70 feet higher than the village of Baraboo. Those steep, craggy rocks around its shore, together with the grandeur of the scenery around, the beauty of its face, the purity and unknown depth of its water, the whiteness of its sand, never fail to excite the admiration of all who visit it; and it is a noted place of resort for parties of pleasure, and will become eminently so, as population increases.

The proportion of prairie in this county is not large. Sauk Prairie in the south-east part contains about 16 square miles, and is bounded on the north by the Baraboo bluffs, on the east and south by the Wisconsin river, and on the west by a range of hills and bluffs, and is highly productive. Spring Green Prairie in the south-west, is of lighter soil generally, and of

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nearly equal size. There are several other prairies of small size: Peck's prairie, north of the Baraboo river and east of Baraboo village; Webster's prairie, in the north-east; Narrow's and Babb's, toward the north-west; Hubbell's, Harstetter's and Blakeslee's, in the north-west; Little prairie and Cassell's in the south.

The wild or unimproved land in this county may amount to about one-sixth of the whole. The quantity of land not suitable for farm purposes, including steep bluffs and undrainable ponds or marshes, is estimated at about one-fiftieth of the whole.

The first agricultural exhibition held in this county under any organization was in October, 1855, and although no cash premiums were offered, its results were highly satisfactory.—Since that time the society has continued to flourish, and has given a great impetus to the industry of the county. Having purchased grounds and erected suitable buildings thereon, it may be said to be on a permanent basis.

The early introduction of improved breeds of horses, cattle, swine and sheep, has added very much to the value of stock in this county. It is even perceptible to the traveler passing through, when he observes the color and symmetry of cattle while roaming at large along the highway. More attention appears to be given to pork-raising here than in most other parts of Wisconsin. During the present season, 189 tons have been bought in the town of Baraboo alone, at an average of $5.46 per cwt.

The improvement in numbers as well as in the quality of of sheep should not go unnoticed; and no county in the State can be better adapted naturally to wool growing than this, on account of its rolling surface, its general freedom from vegetable seeds and burs that injure wool, and its streams of water. Wool has become a valuable staple of this county and has increased in quantity from about 2000 lbs. in 1851, to some 60,000 in 1860, according to the opinion of the best judges.

Baraboo, the county seat, lies mainly upon the south-east quarter of Section 35, Town 12 north, range 6 east, and upon

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both sides of the Baraboo river, about midway of its rapids, upon a beautiful, convenient and romantic site, surrounded by desirable building elevations. The river furnishes clear, pure and wholesome water, besides great water power for machinery. There are 2180 inhabitants in the town, and about 1500 in the village, with a proper proportion of stores, groceries, taverns, mechanics' shops, &c.; but its chief pride is its schools. It has two incorporated institutions — one especially for females, besides three or four public schools. The county Court House in this village is a noble edifice; and, besides the Hall of Justice, contains rooms for the county offices.

The jail is an hexagonical pile of stone, with two stories above the ground floor, and contains rooms for the sheriff and his family.

Dependent upon its water power are two flouring mills, three saw mills with upright saws, two with rotary, one door and sash factory, two planing mills, three lath mills, two furniture factories and one woolen factory; and still the water power is scarcely half used. In addition to the manufacturing establishments already mentioned, the Baraboo mills, superior to any other in the State and perhaps to any other west of Rochester, N. Y., are one hundred and thirty-two feet in length and thirty-two in general width, with three stories above the ground floor, and run six pairs of four feet burrs. These manufacture weekly through most of the year, and send to the Boston market from 600 to 800 barrels of flour, besides furnishing the village and many distant points with flour of a quality that sells in the Boston market; another mill with two pairs of burrs is used by the same proprietor for custom grinding, for a large and populous neighborhood of farmers. In connection with these establishments is a full set of barrel machinery of sufficient capacity for making 4000 barrels per week. There are now manufactured about 2000 barrels per week, by which these mills are furnished, and those of Delton, Portage, Lodi, Sauk, Honey Creek, &c., either in whole or in part. Some of these facts show the advantages possessed by this vicinity and this county in regard to timber for manufact-

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uring and building purposes. Other flouring mills of no mean reputation, are in operation in this county. Sauk City mills, Honey Creek mills, Delton mills, the mills at Reedsburg—(these have been recently burned to the ground with a large amount of wheat in store, but we are told by the owners that they will be soon rebuilt in an improved and enlarged manner.) The amount of flouring at these mills confirms what has already been said in regard to the capability of the soil for growing wheat, and of the increasing progress in that department of husbandry.

The academies and high schools in other parts of the county, as at Sauk, Reedsburg and Delton, must not be omitted; because they, together with those in Baraboo, compare well with, if they do not excel in the whole list of enlightened improvements going forward now among the inhabitants of Sauk county.

INDUSTRY OF ST. CROIX COUNTY.

BY DR. OTIS HOYT, OF HUDSON.

In 1849 St. Croix County comprised the territory embraced in Pierce, St. Croix, Polk and Burnett Counties. At that time only four farms had been opened in a territory embracing over 120,000 acres of land, The present St. Croix County occupies much less space on the map.

It is watered on the west by St. Croix river and lake. Apple river takes its rise in Polk and Dallas Counties, watering the eastern and southern portion of those counties, and running in about a south-westerly direction, watering the northern part of St. Croix County, and discharging into the St. Croix river. Willow river takes its rise in the south-eastern part of Polk County and south-western part of Dallas County, and takes also about a south-westerly direction and discharges into the St. Croix at Hudson. Both of these streams furnish many very valuable mill sites, five of which are improved. The Wil-

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low river waters the north-eastern and central portions of St. Croix County. The Kinnickinnick takes its rise a little south of the centre of the county, and discharges into the St. Croix lake, about three miles south of the southern county line, also furnishing many valuable mill sites, six of which are improved. Rush river and the Eau Gally also take their rise in the south-easterly part of St. Croix County, and run in a south-westerly direction, the former discharging into Lake Pepin, and the latter taking a south-westerly direction is discharged into the Chippewa in Pepin County. Hay river takes its rise in the eastern side of the county, and runs in a south-easterly direction, and is discharged into the Monomonee in Dunn County. All of these streams furnish valuable mill sites. Ten Mile Creek takes its rise near the centre of the county, and discharges into Willow river about seven miles from its confluence with the St. Croix, furnishing also good water power, and turning Beebe & Boardman's flouring mill. Cedar Lake is situated in the northern portion of the county, and extends north into Polk County, affording a fine water power as it discharges itself into Apple river, turning Robert Bowson's flouring mill, and is surrounded by the finest quality of farming lands. Bass Lake is situated north-west of the centre of the county, and is about three miles long and three-fourths of a mile wide, and surrounded by valuable farming lands.

The surface of the towns of Hammond, Cylon, Richmond, Star Plains, Erin, Emerald, Pleasant Valley, Malone and Eau Gally, are just sufficiently undulating for good drainage; and the towns of Hudson, Somerset, Troy and Rush River, are considerably undulating, but not enough so as to injure, to any considerable degree, their value as farming lands.

The soil is generally a deep black sandy loam; but in the northern and eastern portions of the county more clay prevails, which makes it much better for the growth of the small grains and less valuable for corn.

No better land exists in the State, as the following statistics will show: According to the assessor's returns for 1857, only 4,769 acres were under cultivation in wheat and oats, yielding

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45,000 bushels wheat, and 47,934 bushels oats. In 1858 the yield of the crop is estimated at 94,800 bushels wheat, and 99,800 bushels oats. [For the crops of 1859–'60—both discussed by our author in this connection—the reader is referred to the statistics in the report of the Executive Committee, contained in this volume.—ED.]

Of the capabilities of the country to produce the necessaries of life, some correct conclusions may be drawn from the fact that from one small grocery store and no manufactories in 1849, we now have fifteen saw mills, six mills for flouring wheat, four wagon shops, eight blacksmith shops, two harness shops, three cabinet shops, one gunsmith, one jeweler and watch maker, one sash, door and blind manufactory, two plow manufactories, eight boot and shoe manufactories, one fanning mill manufactory, one brick and one lime manufactory, nineteen stores—two of which are hardware and tin establishments—three drug stores, six hotels, four grain warehouses; all employing an aggregate capital of $150,000. We have eight preachers, viz: two Calvanistic Baptist, three Methodist, one Presbyterian, one Free Will Baptist, one Congregationalist, and one Roman Catholic; six church edifices, viz: two Methodist, two Roman Catholic, one Presbyterian and one Congregationalist. We have eight lawyers and five physicians, and two newspapers, the "North Star," and the "Hudson City Times."

The county is traversed from a north-easterly to a south-westerly direction, by several ridges in which are found an abundance of limestone, overriding sand-stone; and what is very peculiar, the soil on the sides and top of these ridges is equally as fertile as that in the valleys. The north and east parts of the county are covered with various kinds of wood, such as oak, ash, sugar maple, red maple, iron wood, tamarac, and pine; "oak openings" are interspersed throughout the county. It will be observed that a little less than 17,000 acres of land was in cultivation in 1859, and at the present time the quantity does not exceed 35,000, or about 10 or 12 per cent. of the whole area. Lands just as good as any that have been

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improved, can be purchased at from $2.50 to $6 per acre; the price varying in proportion to the distance from Hudson City, the market for the county.

A few sheep have been introduced within the last two years, which, owing to our dry and healthful climate, are doing remarkably well. Cattle thrive well, and winter much better than in Illinois, or any region subject to frequent thaws and cold winds.

We have observed the diseases of this region almost thirteen years, and I have yet to learn of more than a single instance of consumption that was not developed before coming here. We occasionally have typhcid fever, some bilious remittent and and intermittent diseases, and frequently, at the early setting in of winter and in the spring, some cases of pleuritis and pneumonia, and once in about five or six years dysentery or bloody flux prevails to some extent.

We have tried long and hard to cultivate the apple, with partial success. The grape, currant, gooseberry, strawberry, &c., grow abundantly, and the woods furnish us with abundance of the raspberry and blackberry, and the marshes with cranberries.

INDUSTRY OF TREMPEALEAU COUNTY.

BY GEORGE GALE, OF GALESVILLE.

TREMPEALEAU COUNTY derives its name from a bluff about four hundred feet high, and containing about forty acres, situated in the Mississippi River, which was a landmark of the old French voyageurs, and means, "Soaking in the water."

The county is located on the east bank of the Mississippi, between the south line of township 18 north and north line of 24, and between the east line of Range 7 and the center of Range 10 west, and contains about twenty townships of land. It is watered by the Mississippi on the south, Black river on the south-east, Beaver and Tamarac creeks in the southern

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townships, Buffalo river running west through the extreme northern townships, and Trempealeau river, and its tributaries, running west, nearly through the center of the county; thence, turning south, forming the south-western boundary. It also has innumerable soft water springs and trout brooks.

The surface of the land is uneven, and composed of valleys along the streams, with long sharp ridges between. The bluffs or ridges are chiefly made up of the Potsdam sandstone of the old Silurian period, with the higher portions of them capped with the old magnesian limestone. The sandstone rises about 450 feet above the Mississippi, at low water; after which the limestone commences, and sometimes, although very seldom, obtains a thickness of fifty feet. These rocks all contain numerous *Lingula* shells, casts of *Trilobites* and many other organic remains.

Between the Mississippi and the bluffs, a distance varying from three to five miles, the land is nearly level and has spots quite sandy. There are also sandy tracts, of from ten to two hundred acres, along the banks of the Buffalo and Trempealeau rivers, but throughout the balance of the county the soil contains a sufficient amount of clay and is of extreme richness. But very little of the soil, however, is too sandy to be productive.

The timber along the Mississippi and Black rivers, is principally oak, ash, basswood, and the white and sugar maples. On the small creeks there is occasionally a small tamarac marsh of a few acres, while the balance of the timber, throughout the county, is white and burr oak. The south half of the county contains a good supply of timber, but in the north half it is not as abundant. The scarcity in the north, however, is made up by its proximity to the pineries on Black and Eau Claire rivers, where lumber can be purchased at low figures.

The climate of this region is dry and very healthy, and actually warmer than the region of Dane county, notwithstanding it is in a higher latitude. This I have verified for several years by the Spring being from one to two weeks

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earlier, and the frosts in the Fall, not as early by the same time. I account for this by the fact, that this region, being in the valley of the Mississippi, has a less altitude above tide water than that county. Other elements probably contribute to produce the result. The winters, however, are more steady than in a more southern latitude; and while we do not have more snow than Dane county, yet the ground seldom thaws enough to be muddy, until the Spring fairly opens.

All kinds of vegetables that can be raised in any other part of Wisconsin, grow luxuriantly here. The more sandy portion of the soil has produced melons equal to any ever raised on Long Island, in size, quantity and quality.

While winter wheat cannot be regarded as a certain crop in any part of the West, yet I have known it to fail but once in this region since its first settlement. Some fields, last year, averaged over forty bushels to the acre. Spring wheat averaged about thirty-five bushels. I have frequently raised thirty bushels per acre of spring wheat, years previous. The corn crops have generally been very heavy.

No extra effort has been made in raising stock, but the county has many good horses and cattle. I think this region is very favorably adapted to raising sheep. The entire county with its hills and valleys, is covered with a luxuriant and nutritious wild grass, on which all kinds of stock thrive well.—Sheep, like goats, are only at home when they can be climbing over hills and rocks. Mr. Geo. H. Smith of Galesville, the President of the County Agricultural Society, brought in three hundred of them last summer, to try the experiment, and I understand that they have met his highest expectations.

But little has been done yet towards raising fruit, and the experience on apples has been quite unsatisfactory. This is probably, in part, owing to the fact that the grafted trees have been obtained from down the Mississippi, in a much more southern latitude. George Batchelder. Esq., of Trempealeau, has a few grafted bearing trees that are doing well. Currants and gooseberries are very successfully grown.

Trempealeau County is yet quite new, the greater part of

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the inhabitants having come in and settled within the last six years. The centre and northern part of the county is still sparsely populated; but as the lands are cheap and of an excellent quality, we have every reason to believe that our county will soon have a population equal to the older settled counties of the State.

INDUSTRY OF WALWORTH COUNTY.

BY DAVID WILLIAMS, OF SPRINGFIELD.

TOPOGRAPHY.—The County of Walworth consists of openings, prairies, marshes and lakes—about one-fourth prairie, one-tenth lake and marsh, the remainder openings and groves. The surface of the county is gently undulating, broken on the north-west and south-east into knobs or sharp conical hills, composed mainly of pebbles of limestone. These knobs are nearly all wooded with scrub oak, some affording good timber.

The county is well watered, has numerous springs and five mill streams, with numerous branches, affording abundance of water power. There are also twenty-five lakes of various sizes. Geneva lake, the largest, has a length of about eight miles, and maximum width of about two miles.

The central portion of the county, presents an elevated nearly level plain, dividing the county into two geographically equal parts; that on the west is drained into Rock river, and the eastern half into Fox river.

SYLVA.—Nearly two-thirds of the county was originally covered with a forest of oak, usually called "timbered openings," and composed mainly of white, yellow, burr, black and pin oaks, with a few shell-bark hickories. The shores of some of the lakes, also some creek bottoms, were covered with a heavy growth of timber of various kinds—oaks of many varieties, black walnut, butternut, sugar maple, linden and two or three varieties of elm. These are all quite too rapidly disappearing. As substitutes for wood fuel, we have peat in great abundance, and quite general distribution.

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ROCK.—There is but little rock found in place. Stratified lime rock is found in East Troy, Spring Prairie, Darien and Richmond. That portion of Rock Prairie lying within the county is mostly, if not wholly, underlaid with lime rock. Loose drift boulders are abundant in the openings, but few are found on the prairies. These boulders are of various species of rock; now and then one of lime rock is found. Some that were apparently soft marl lime when deposited here, having many curious marks and indentations, are now cracked and seamed by the process of drying; looking not unlike the knife-marked "short-cakes" my mother used to bake before the fire.

THE SOIL of the country presents two marked divisions—"openings and prairies." The soil of the prairies presents a nearly uniform appearance and character. The surface soil, from six inches to two feet in depth, is of a dark brown color; texture loose and friable, easily pulverized, wetting readily and drying quickly, becoming dust quite too readily, under favoring circumstances; is rich in vegetable matter, less so in mineral; very productive, and when well and deeply tilled, bearing well the alternations of wet and dry. It is more subject to frosts, and does not mature crops so early as soil having more lime, sand and clay; is immediately underlaid by a stratum of loam, varying in thickness from one to five or more feet, occasionally increasing in density until it becomes a kind of hard-pan, which is immediately succeeded by a very hard earth, or kind of soft rock, which is water-bearing; but it is more commonly succeeded by loose pebbles of water-worn limestone. This gravel stratum varies from a few feet to fifty, sixty, or more in thickness, resting on the soft rock before named, and commonly contains water. The soil of the openings varies materially from that of the prairies, resembling, to some extent, the subsoil of the prairies, though lighter in color; has more sand, lime, and clay, and usually more iron; has a greater variety of appearance and character.

In the north-east and south-east portions of the county, the soil contains more sand, less lime and clay than the soil of the rest of the county, and as a consequence (not because of

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there being less lime and clay, but from the abundance of sand) is warmer, and quicker, both in starting and maturing crops. That portion of the openings lying at the foot of slopes, or between swells or ridges, differs from all other soils of the county; is of a darker color, very adhesive, and contains an abundance of vegetable and mineral substance, often immediately underlaid by a thin stratum of adhesive clay, containing much lime, in the form of partially decomposed pebbles. This is succeeded in turn by the *first subsoil* of the uplands, which is calcareous; thickness usually one to two feet, succeeded by a calcareous clay, of a redish color, very tenacious, and when wet, difficult to handle, but after being comminuted by frost and subjected to the continued action of sun, rain, and air, becomes an excellent fertilizer. This is succeeded by hard-pan, of a black color, which, in descending, increases in hardness, becoming, at the depth of from ten to twenty feet, soft, water-bearing rock. This stratum is sometimes displaced by the gravel beds of the prairies. In all cases, the water of the different strata is held by each independent of the other.

THE HUSBANDRY is much like that of our neighbors, not much better nor worse. Wheat forms the staple crop; mostly of the spring variety. Club (Canada and Scotch) and Rio Grande are the favorites in market and for milling. The variety known here as the Missouri white, is the earliest, being earlier than winter wheat; gives the best flour, but has not so far proved as productive as other varieties. The kind known as the Fife is quite a general favorite with farmers, being more hardy, less liable to smut, rust, or lodge, but is not so well liked in market, selling at from two to five cents less per bushel than the more favorite kinds. Oats are not much cultivated as a market crop, paying less, for the labor, than wheat; also generally thought to be more exhausting to the soil; mostly grown for horse feed, and considered the best grain for that purpose. Barley is not grown to a very great extent, though paying well, and not considered as exhausting as other small grains. It is unpleasant to handle on account of its liability to lodge, and its long, torturing beards. Corn is a general

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favorite; yields well when properly tilled; is mostly fed; only a small portion marketed in the grain. Buckwheat is mostly grown in the accidental blanks of other crops. Broom corn is grown to some extent; is, under favorable circumstances, a profitable crop.

Sorghum is grown to a small extent, does well. The knowledge of manufacturing syrup from it is improving, and becoming more general. This crop is, I think, destined to become a general favorite. Roots and tubers are, except potatoes, but little grown. Grapes are more generally grown than formerly, and usually produce well—less so the last two seasons than formerly, owing to the drouth. The kinds mostly grown are timothy, red top, and clover, mostly the variety known as June clover; the large red or Dutch clover is grown to some extent, and considered much the best for improving land, both for plowing in as a fertilizer and for opening the subsoil by means of the large roots. White clover does well, is rapidly taking the place of the native grasses on uncultivated upland; furnishes good pasturage, and is the always-to-be-relied on store house from which the honey-bee obtains supplies of that luxury of all luxuries, pure honey.

Stock.—Sheep are now considered the more profitable stock, and are rapidly increasing. Wool is, I think, more extensively produced in this than in any other county in the State. A fair and increasing attention is being paid to the improvement of all stock in the county. Cattle and horses are receiving a good share of attention. There are several fine herds of blooded cattle in the county—the Durham are the more numerous. Horses are numerous, mostly of the ordinary breeds; none of much pretensions to blood, unless the Morgans and Blackhawks be so considered.

Fruit.—Not so much attention is given to fruit raising as formerly. Most of the cultivated fruits have so generally failed wholly or in part, that many feel little courage in giving that they have proper attention, much less in making new investments. The bark louse is charged with many failures that are probably owing to causes more immediately within the reach of proper

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cultivation to remove. Cold, sour, retentive subsoil may probably be justly charged with some, if not many disasters; also, severe croping, turfing, or stocking down; not to leave unnamed the fact that no small proportion of the subsoil contains known injurious substances, such as sulphate of iron, and simple oxyd of iron, or soluble iron. These are both so readily removed by drainage that we can scarcely say that we have tried to raise fruit, untill we have underdrained. I am sanguine in the faith that we are at the lowest descent in fruit raising—the rest of the way let us hope is *upward and onward.* The conversational meetings, and lectures on this subject, at our last State Fair, will, I fully believe, prove of far more pecuniary value to the people of the State than to over-pay the total cost of the Fair. I have seen during the past summer, orchards of apple trees as badly killed out, where there was not a *bark louse to be found* in the orchard, as in those orchards where that pest abounded. In all these cases I found the land *well stocked down in fine grass.*

TILTH.—Our method of tilth may be not untruthfully styled "to plow all we can, sow all we can, and when we can." Fall plowing is considered best for all small grain, using a cultivator in spring. Usually the grain is scattered broadcast by hand upon the furrows as left by the plow, and covered with the cultivator or harrow, and it is complete. The more recent and better practice is to first run the cultivator over the ground as deep as the strength of the team will permit, then sow, and cover either with the harrow or cultivator. For corn, spring plowing is generally preferred, first applying manure. Fall plowing for corn is now receiving more favorable consideration. The method and manner of tilling is steadily, but slowly improving. Plowing is done more thoroughly and deeper. The wheel cultivator is rapidly becoming a favorite, and justly so. But little attention is given to any *system* of *rotation*, with a view to improving the soil. Indeed it may be justly said of us that *we have no system*; only doing for the present the best we can. The two relentless and unpitying masters, *debt* and *greed*, goad us on to plow and sow. In the care of stock, *we are im-*

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proving. A straw stack is no longer considered all-sufficient for both food and sheds during our arctic winter. Good stabling, warm yards, with cut straw and grain, or good barn-secured hay, is thought to *pay*, particularly for milch cows.

IMPROVEMENTS.—Improvements are being made as fast as the means can be procured to make them, and some faster, in quite too many instances. Good substantial dwellings are rapidly displacing the more primitive log ones in which we first sheltered our wives and little ones. But kindly memories will long cluster around the site of the *old log house*. The recent low price of lumber has given a great impetus to improvements in dwellings, barns and fencing. The latter is and must continue to be a heavy tax to the farmer, until the foolish practice is discarded of compelling every man by law to *fence in his crops*, when all that should be required of him is to fenco in, each his own stock. The cost of *unused fences*, or those required only to prevent stray animals from trespassing on our crops, is *greater than the total cost of town, county and State government;* and the profits are found mainly in the privilege of a few *lean kine* to crop the dust-covered, hoof-beaten, herbage of the highways. It is to be hoped this worse than useless waste may be considered by our law makers—or rather our farmers, for the remedy rests with them—and this heavy burden be removed.

INDUSTRY OF WAUKESHA COUNTY.

BY GEO. C. PRATT, OF WAUKESHA.

The territory comprising the county of Waukesha is twenty-four miles square, and was taken from the county of Milwaukee in the year 1846. Its eastern boundary is eight miles from Lake Michigan. It is composed of sixteen townships, containing thirty-six sections each. The United States census, taken in 1860, gives us a population of 26,849, which is constantly on the increase, and is made up from nearly all the nations of the earth. The principal part, however, are the genu-

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ine Yankees and their descendants, while Germany, England, Scotland and Wales come in for a goodly share, and the "sweet Irish brogue" can be heard in every town; all together making a class of inhabitants as intelligent and industrious as any county in the State can boast of. The county is strictly agricultural; surface rolling, and in some parts quite broken; its soil well adapted to the raising of wheat aud the various kinds of coarse grains grown in the State. In many parts of the county the soil is well adapted to growing the different kinds of grasses. It is well supplied with living water. Fox River passes through it in one direetion and Bark River in another; besides which it is well supplied with springs in every town.

There are some twelve or fifteen most beautiful lakes of various forms and sizes, from one-half mile to four or five miles in length, around which are located some of the most beautiful farms and residences that can be found in the State.

Stock and wool growing, are considered the two most profitable branches of agriculture. The amount of wool grown in the county in 1860 is estimated at 200,000 pounds. Of the amount of beef and pork I have no figures from which I can make anything like an accurate estimate. The wheat crop of 1860 is estimated at over one million bushels, which was worth at home about five cents per bushel less than the Milwaukee prices.

The various and necessary classes of mechanics are distributed through the county in such numbers as to make it profitable to themselves and convenient for the people.

There are but few manufacturing establishments in the county, though there is quite a large amount of farming implements and machinery made in the county. There are also several large flouring mills doing quite an extensive business.

There are two railroads passing directly through the county. The main business points on these roads are Waukesha, Genesee, and Eagle, on the Milwaukee and Prairie du Chien Railroad; and Pewaukee, Hartland and Oconomowoc on the Milwaukee, Watertown and Baraboo Valley Railroad.

The villages and towns are all well supplied with the best of

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schools, and in the country the neat white school house has taken the place of the old log one. Of the higher order of schools, we have Carrol college located at Waukesha, and the Theological Seminary located at Nashota, besides schools for young men and misses in the most of the towns; all of which appear to be in a flourishing condition.

INDUSTRY OF WAUPACA COUNTY.

BY DR. L. B. BRAINARD, OF WAUPACA.

WAUPACA COUNTY embraces the Government-surveyed townships numbered from twenty-one to twenty-five north, in ranges numbered from eleven to fourteen east, also town twenty-five, range fifteen, containing twenty-one townships, and according to the original survey, seven hundred and fifty-six square miles.

NATURAL ADVANTAGES.—The Wolf river flows from north to south through the eastern portion of the county, and is navigable for steamboats. The Little Wolf and Embarrass rivers and their branches traverse the northern and central portions, affording abundant and reliable water powers.

Most of the eastern half of the county is heavily timbered with the usual hard wood varieties found in this latitude, and interspersed with pine groves and scattering pines of an excellent quality of timber. White and black oak of an excellent quality for staves and machinery are abundant; also basswood with considerable butternut and birch, suitable for furniture. There are numerous sugar and white maple groves, and in the northern portion of the county, extensive groves of hemlock.

All the water powers on the Little Wolf, from its mouth to Micklejohn's mill, (saw mill and grist mill,) in town 23, range 13, were improved early in the settlement of the country, for the purpose of manufacturing lumber, an immense amount of which, as well as of pine logs, is constantly being taken down the Wolf river to Oshkosh, and up the Fox river to its differ-

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ent towns and landings, from whence the whole country adjacent is supplied with lumber. Fond du Lac, also, is indebted to this region for her entire lumber trade, including all the pine logs that have been transported by Rail Road to Lake Horicon, and down Rock river to Janesville and intermediate towns. Neenah, Menasha and Appleton also obtain most of their pine logs from this Wolf river country.

The north-western, western and southern portions of the county are more hilly; the bluffs and high hills being liberally supplied with granitic and sienite boulders. The timber is of little value, except in places upon the streams and in and around the swamps and marshes, consisting chiefly of white, black and burr oaks, and white birch and poplar. The table lands are more free from stone, and generally burr oak openings or prairie.

The Waupaca river flows through and waters the south-western part of the county. It rises from and is sustained by springs and perennial lakes interspersed among the hills. Many of these lakes have no visible outlet; others have beautiful, limpid and constant streams flowing from them, the water of which as well as that of the springs, is generally impregnated with lime, a deposit of which in the shape of marl is found in very many of the lakes.

The Waupaca river discharges its waters into Wolf river in the north-eastern part of town twenty-three, range thirteen. About two miles from its mouth the village of Weyauwega is situated, where there is a very valuable water power, improved by the "Weyauwega Mill Company;" whereon they have erected an extensive flouring mill and saw mill, both of which keep running constantly. Between Weyauwega and Waupaca Falls, a distance of about nine miles, there are a number of water-powers not yet improved.

The village of Waupaca is situated at the falls of the river, near the west line of town twenty-two, range twelve. Here the river at low stage discharges about 1,200 cubic feet of water per minute, and has a fall of eighty-three feet in two miles. There are only three dams erected here, and the power thus

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obtained is only partially employed. The river has a rocky bottom, with good banks upon each side for building, situated from four to ten rods apart.

The water power here is among the most eligible for improving that nature ever formed, and there is no place in the interior of any of the western States that can offer better inducements for the employment of capital in manufacturing than this.

The south branch of the Waupaca river, discharging at low water about 800 cubic feet per minute, approaches the village from the south-west, bends to the east and unites with the main stream about two miles below. On this stream the "City Mills" is situated a little south-east of the village—a flouring establishment justly celebrated for the quality and amount of the work it turns off. This south branch rises near the south-west corner of the county, and flows from south-west to north-east, through town 21, range 11, affording abundant water powers, only three of which are improved; the Crystal River Mills and Parfreyville Mills at Parfreyville; the Empire Mills at Rural.

Little river, a small stream rising near the south-west corner of the county, empties into the Wolf, in town 21, range 13, a little below the mouth of Waupaca. This stream has several water-powers, two of which have been improved by the erection of saw mills. Several other saw mills have been erected upon the small streams, tributaries of the Little Wolf and Embarrass; also, a very respectable flouring mill on the south branch of Little Wolf, in town 23, range 11, known as "Scandinavia Mills."

Swamp Lands.—There are in the county 62,712 acres, or nearly ninety-eight square miles in the aggregate, of what are reckoned to be swamp or overflowed lands. If we add to this an estimate of one-eighth, or 7,840 acres, we shall include the area of the small lakes scattered over the county. The swamp lands are more or less elevated, and nine-tenths can be drained, and thus converted into the best of lands for cultivation. This enterprise and industry will soon accomplish.

Non-Resident Lands.—A large proportion of the timber

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lands were entered by speculators, on account of the pine and other valuable timber. In this fact is to be found the principal reason why the northern portion of the county is so sparsely settled. How long this difficulty will be continued, is not easy to determine. Every winter witnesses the felling and removal of a large number of the stately trees to distant places, thus abstracting the primitive value, and leaving behind no corresponding benefit. Probably it is the design, when the timber has been taken off, to turn the land over to the actual settler, who will pay the taxes. But this is an evil incident to most new countries, and to the unjust policy pursued by the General Government in disposing of the public domain.

Soil and Agriculture.—The timber lands differ very little from the openings and prairies in the quality and strength of the soil. Throughout the county, the more elevated lands are generally of a sandy loam. In a few locations, however, the soil is quite tenacious and heavy. The dry bottoms are decidedly alluvial.

The low lands produce excellent grass, and the high lands, where they have been cultivated, have proved themselves well adapted to the growth of wheat, (both winter and spring,) rye, oats, corn, and other grain. Potatoes, turnips, carrots, etc., etc., always grow admirably, when properly cultivated.

Much of the land in town twenty-one, ranges eleven and twelve, appears, to the passing traveler, of a sandy and thin soil; but these poorest lands contain a sufficient amount of lime to prevent "leaching;" consequently, the cultivator of them gets the full value of his manures.

The poorest lands in the county were entered upon and improved by the first settlers, simply because they were the most easily brought under cultivation. The more tenacious and richer soils, requiring more labor and expense to remove the grubs and stone, and subdue the land, were left to a later day.

In the absence of manufactories for furnishing necessary farming implements and machinery, and also for furnishing necessaries for a comfortable subsistance, the agriculturalists of the county have been, and are still under the imperative

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necessity of *drawing upon the soil* for a great portion of their living. In the desire to obtain the most they could from what little labor they were able to bestow, cultivation has been, in most instances, too superficial, and the grain produced has been sold and carried off to purchase supplies and sustain foreign manufacturers, and to pay debts, so that there has been but little returned to the land in the shape of manure; notwithstanding which, the yield of wheat the past season has been from twenty to thirty bushels per acre, of plump and heavy grain, although it had been grown upon the same land for three and sometimes for four successive years.

The past season the agricultural productions have been remarkably good; the surplus yield of wheat in the county, according to judicious estimates, amounting to over half a million of bushels; together with nearly an equal amount of coarser grain, among which Indian corn is the largest crop.—It has been supposed that rye would be a desirable crop to raise, but careful observation and trial have shown that wheat can be produced just as well, bushel for bushel, and that it is no more exhausting to the soil.

As a forage crop, millet and Hungarian grass have been extensively grown, and have given good satisfaction. They are considered a very good substitute for the perennial cultivated grasses, which do not succeed well upon the light soils.

Stock.—It has been often said, that stock-raising could not prove in this county a remunerative business, on account of our long and severe winters; as it must necessarily require a large amount of feed and care to keep cattle from autumn until grass grows in the spring. This opinion, however, which seems to have been formed upon abstract theory only, is gradually yielding, and people are now finding out that the cheapest and best way to obtain horses, oxen, cows, sheep and swine, those necessary concomitants of civilized life, is *to raise them.*

Stock of every description need comfortable buildings to protect them from the inclemencies of the weather, and when suitable stabling is provided and feeding is judiciously done, the yield of straw, bran and shorts, from two and a half acres

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of good wheat will keep a cow and her calf in thriving condition through the winter. When cattle are suffered to run over and tramp their fodder under foot, they destroy much more than they consume for food, which adds materially to the expense of keeping stock through the winter. This "letting cattle run" policy has been too much pursued heretofore; but a more suitable, humane and profitable course is now being adopted by many, and the advantages thus illustrated are producing a salutary influence.

Waupaca County is not adapted to stock-growing as an exclusive business, but so far as it can be associated and combined with a mixed husbandry it will pay and pay well. Many good breeding animals have already been introduced, and although there may not be any *very superior* stock yet owned and kept in the county, yet with every succeeding year improvements in this respect are observable. A few sheep have been brought in, but the want of suitable enclosures to protect them from the depredations of wolves and dogs, has made the investment a poor one. But sheep in this country, when properly cared for, by being confined by fences within a suitable range during the day, and herded nights, in well secured buildings or yards, will pay for all their trouble and expense. Stony hills and bluffs make good sheep pastures, and long and cold winters contribute towards producing a thickness of fleece and fineness of staple so much desired by manufacturers.

Fruit.—The small fruits, such as currants, strawberries, raspberries, blackberries, and the hardier varieties of cherries and plums, grow without any difficulty, and bear fruit every year. Many orchards of apple trees have been planted that give good promise, and last year, wherever there were trees of sufficient size, they were well filled with fruit. One thing is now proved: fruit can be cultivated here of a good quality.

Population, Improvements, &c.—Waupaca has a mixed population, but chiefly immigrants from the Eastern States. Although it is only a little over ten years since civilization entered upon these lands, there are few counties of any age supplied with better society, better regulated schools, and a more church-

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going community, than this settled portion of the county. The energies and stability of New England and the western States seem to be here combined, and this county has been made what it is, simply by enterprise and industry. There has never been any wealth brought here, except in the shape of manual force and animal power. Stout hearts and willing hands have done the work. The assessed cash value of the property on the county tax list is $1,296,369.00—the estimated market value is more than three times this amount.

Roads and highways are not only comfortable but good, chiefly the result of individual gratuitous labor. But the work which speaks the most for the enterprise of this community, is the construction of the Oshkosh and Wausaw Railroad. The work was commenced last June, and already individual labor by subscription and donation, has completed over ten miles of the grade in the county; and with the same spirit and energy continued, the road, connecting with the Chicago and North Western at Neenah in Winnebago county, will be completed to the village of Waupaca, within the ensuing eight months.

Responsible parties have already stipulated to furnish the iron and rolling stock as soon as the portion of grade now commenced is completed and ready for laying down the rails; so that the people in this new county have a near prospect of possessing railroad advantages without the incumbrances of county or corporation bonds, or farm mortgages.

MANUFACTURES.—In addition to the saw mills and flouring mills already alluded to, there are very few of any kind. Some four or five steam saw mills have been erected at different points upon Wolf river, that are doing a fair business. A steam grist mill is just being started at New London, in town twenty-two, range fourteen. It is a good point for the enterprise.

There are three establishments for tanning and currying; one at New London, one at Weyauwega, and one at Waupaca. The proprietors are all men of limited means, but they are doing a healthy business. All the other manufacturing establishments are only of the ordinary class of mechanic shops to be found in every village.

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The large amount of permanent and durable water power, so easily improved, to be found in Waupaca county, would point it out as designed by nature for an extensively manufacturing locality. The advantages exist, and the opportunity is here afforded for the investment of capital, of either small or of a larger amount. With skill and application to manage it, good returns will be sure to follow.

INDUSTRY OF WINNEBAGO COUNTY.

BY J. B. OSBORN, OF OSHKOSH.

An examination of the map will show that Winnebago County is remarkably well watered; the principal streams being the Fox and the Wolf. The county has also numerous small streams which flow into these rivers and Lake Winnebago.—Springs are not uncommon. Besides Lake Winnebago there are the "Big Butte des Morts," "Little Butte des Morts" and Lake Poygan (which are expansions of Fox and Wolf rivers), and Rush Lake. Fox river flowing from the "Portage" enters the county at its south-west corner, flows north-easterly to about the centre of the county, where it is intersected by the Wolf; it then turns to the south-east almost at right angles to its previous course, expands into the "Big Butte," which is about four miles long and two broad, and after flowing about eight miles from its junction with the Wolf enters Lake Winnebago, having at this point a depth of thirty feet, and a breadth of about an eighth of a mile.

The outlet of Lake Winnebago, called the "Lower Fox," is in the north-east corner of the county; it leaves the lake by two channels, designated the north and south channels respectively, which unite after flowing about two miles, forming a beautiful island of eight hundred acres, known as "Doty Island." The stream then expands into "Little Butte des Morts," which is about three miles long and from one-half to three-fourths of a mile in width. It is again contracted to its

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proper channel and flows northerly to Green Bay, having formed, in its course from Lake Winnebago, a series of water powers as extensive as can be found in the north-west; those in Winnebago County on the north and south channels of the outlet being known as "The Rapids."

Wolf river enters the north-east corner of the county, and after flowing south-easterly about five miles, expands into Lake Poygan, which is about ten miles long and from two to five miles broad; it is again contracted into a fine stream at Winneconnee, and after flowing about three miles enters the Fox. A great mistake was made in naming the stream formed by the junction of the Fox and the Wolf. That the Wolf is actually the main stream is a fact known to every one familiar with these waters, and at the point of confluence is by far the largest and finest stream, the Fox entering *it* at right angles. The importance of the Wolf has in no small degree been overlooked by the misnomer. *Sixteen years ago* the steamer Manchester, Captain Hotaling, ascended the Wolf with machinery for a saw-mill, as far as Shawanaw, with no further trouble than cutting away a few trees which had fallen from the banks into the channel, a distance by the river of 150 miles from Lake Winnebago. Regular steamboat communication to Shawanaw is now established.

Lake Winnebago is a fine sheet of water, thirty miles in length; its extreme width is about twelve miles. It is remarkable for the beauty of its banks, especially on the west side, which is indented with numerous little bays, forming points of land jutting into the lake in a very picturesque manner.

Rush Lake, in the south-west corner of the county, is about five miles long, with an extreme width of about two miles. It is proverbially noted for its outlet, in which is several excellent water powers.

The water communications of Winnebago County give just importance to its natural position. The fact that steamboats are brought into these waters from Pittsburgh and from Chicago, is sufficient indication of their extent. The Wolf reaching up into extensive pineries, the Lower Fox opening the way

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from Lake Michigan, and the Upper Fox and the Wisconsin admitting ingress from the Mississippi and its far reaching tributaries, leave little further to be desired.

Its natural position, however, has been much enhanced by the improvement of the Lower Fox, by the Fox and Wisconsin Improvement Company, effecting an uninterrupted communication through to Green Bay. The business on this route is increasing very fast, and I am informed by a shipping merchant of Oshkosh that the freights of 1860 were ten times as great as those of 1859. That the entire exportation of wheat from this section of the State must eventually be made through this route, cannot be doubted. The fact is significant that last season the wheat buyers at Oshkosh who shipped by this route, were enabled to offer the farmer five cents per bushel higher than those who shipped to Milwaukee and Chicago by railroad. I am informed that steam freight tugs are now building designed for the more successful prosecution of this business in future. In railroad communications the county has the advantage of the Chicago and Northwestern (now completed to Appleton,) and also a road running to Omro, (shortly to be extended to the Wolf river at Winneconne,) connecting with the Milwaukee and Horicon road at Ripon.

The surface of Winnebago County may be said to be gently undulating, and about equally divided between timber, prairie, openings and marsh. A sub-soil of red clay underlies the surface of nearly the whole county. The upper soil varies from a rich black muck to a light sand, although the latter occupies but a small space relatively; an intermediate may be said to predominate. On the prairies we have the usual black surface, rather light, with the red clay sub-soil. As we approach the openings, we have a heavier soil, not as rich as the prairie, but perhaps better adapted to wheat, which is the main crop with the farmers. It is difficult to generalize in respect to the soil of the whole county, when there is scarcely a farm that has not two or three varieties of soil. It is, however, the subsoil which gives character to the land, and it may be said to equal the requirements of the farmer in that particular. When

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exposed to the action of the frosts of winter, it seems to "slack," becomes disintegrated, friable and productive.

Besides wheat, oats, corn, barley, &c., are raised in sufficient quantities for home consumption. The marshes produce natural grass which makes excellent hay, but are fast being improved by sowing "red top," which readily catches and yields from two to three tons of hay per acre.

Systematic drainage and sub-soil plowing have not been applied to any extent as yet, but evidently with great advantage in those cases where they have been tried.

Fruit culture has not been prosecuted extensively, although almost every farmer has a small orchard started. Under proper cultivation there is no doubt that the land in the immediate west side of Lake Winnebago offers peculiar inducements to fruit growers, nursery men and horticulturists. The quality of the land is excellent, and the situation favorable to drainage, while security from frost is absolute from the protection afforded by the lake. The locality seems to be well adapted for the extensive cultivation of the superior class of hardy grapes, now being extensively grown in other parts of the country. Corn stands unscathed by frosts, the effects of which can be seen on every field back from the lake, and it is not uncommon to see green tomatoes even in November.

Stock raising is carried on to a considerable extent in this county, in connection with other branches of farming. The importations of the thorough-bred horse "King of Cymry," the Durham bull "Menasha Mac," and South Down sheep, by Capt. Mackinnan, of Doty Island, and the herd of Devons belonging to Mr. L. A. Stewart, of Butte des Morts, have already produced permanent effect upon the character of the stock.

Our wheat crop can hardly be excelled by those of any other county. The acre which obtained the premium offered by the County Agricultural Society this year, produced 65¼ bushels (by weight.)

The development of the agricultural capacity of Winnebago county has been rapid, and may perhaps be indicated by the increase of its population, which, in 1846 was but 732, and in

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1860, amounts to 23,788. At the present time good unimproved lands can be obtained at from three to ten dollars per acre. Improved farms at from ten to twenty dollars per acre.

The lumber interest of Winnebago county stands next in importance to that of agriculture. Although possessed of no fine forests within its bounds, its position makes it the recipient of almost the entire lumber business of the Wolf river pinneries; Oshkosh being the main depot and the point where a large share of the manufacturing is done. It is also manufactured at the Rapids, at Omro, Waukau, Dellin, Eureka, Menomonee and Butte des Morts.

The business is increasing, having received a powerfnl impulse from the completion of the Chicago & Northwestern Railroad to Oshkosh; by which great quantities of lumber are carried south to supply the inhabitants of the Rock River Valley. The present prices, *delivered on the cars* at Oshkosh, are about as follows: per M., common, $7; fencing, $8; dimension boards, $8; best clear $14 to $18; 2d quality clear $10 to $12; best flooring, $16; 2d quality flooring, $12; inch siding $5 to $6.

As a manufacturing point, Winnebago County is justly proud of "The Rapids." This extensive water power has already concentrated a heavy manufacturing interest within the limits of Neenah and Menasha, the first being situated on the south and the latter on the north branch of the "outlet." Besides ten first class flouring mills, having collectively thirty-one run of stone, there is carried on the manufacture of lumber; also barrels, (by machinery), woolen cloth, wagon spokes, furniture, &c. At Menasha the establishment of E. D. Smith, for the manufacture of pails, tubs, &c., by machinery, employs 100 men constantly. Stone pottery is also manufactured here.

The water power at Waukau on the outlet of Rush Lake, is used by two flouring mills, noted for the excellent quality of their work.

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Abstract of Returns of County Agricultural Societies, for the Year 1860.

COUNTIES.	REPRESENTATIVE OFFICERS.			PLACE AND DATE OF FAIR.		FINANCES.				
	PRESIDENTS.	SECRETARIES.	TREASURERS.	PLACE.	DATE.	AM'T OF PREMS.	TOTAL RECEIPTS.	EXPENDITURES.	AM'T IN TREAS'Y.	INDEBTEDNESS.
Adams,										
Bad Ax,	Wm. T. M'Connell,	O C. Smith,	A. Smith,	Viroqua,	Sept. 10 to 12,	$56 25	$229 03	$227 32	$1 71	
Brown,	J. W. Cotton,	M. P. Lindsley,	D. Butler,	Green Bay,	Sept. 25, 26,	34 00	424 61	416 41	8 21	
Buffalo,										
Calumet,	Jas. Christie,	R. D. Waller,	S. M. Crawford,	Gravesville,	Oct. 4,	98 70	338 83	240 61	98 22	
Chippewa,										
Clark,										
Columbia,	J. J. Guppy,	H. Converse,	F. C. Curtis,	Cambria,	Sept. 18 to 20,	238 00	335 00	300 04	34 96	
Crawford,	T. W. Tower,	J. H. Greene,	Jas. Fisher,	Pr. du Chien,	Oct. 4,	152 00	261 00	261 00		
Dane,										
Dodge,	Henry C. Griffin,	Oliver H. Crowl,	David Barber,	Juneau,	Sept. 11 to 13,	265 40	453 82	452 36	1 46	
Door,										
Douglas,										
Dunn,										
Eau Claire,	Jos. G. Thorp,	W. T. Weber,	D. R. Moore,	Eau Claire,	Sept. 18, 19,	200 75	349 76	317 05	32 17	
Fond du Lac,	H. Conklin,	Isaac Brown,	A. B. Taylor,	Fond du Lac,	Sept. 18, 19,	236 00	477 85	410 57	67 28	
Grant,	A. Cams,	Jas. A. Jones,	J. B. Cullis,	Lancaster,	Sept. 19, 20,	305 25	838 15	858 61		20 46
Green,	J. Smith,	Wm. W. Wright,	J. Sutherland,	Monroe,	Sept. 20 to 22,	311 91	476 00	475 68	32	
Green Lake,	E. Jones,	Ira Sherman,	Ira Sherman,	Dartford,	Sept. 20, 21,	131 08	241 10	178 87	62 23	
Iowa,	H. M. Billings,	L. M. Strong,	R. Arundell,	Dodgeville,	Oct. 3 to 5,	180 00	913 75	982 75		69 00
Jackson,	E. Wilcox,	D. J. Spaulding,		Bl. Riv. Falls,	Oct. 9, 10,	112 00	266 40	229 35	37 05	
Jefferson,	Milo Jones,	Robert Fargo,	N. B. Smith,	Lake Mills,	Sept. 19, 20,	193 48	274 90	255 98	18 02	
Juneau,										
Kenosha,	Jas. M. Kellogg,	H. H. Tarbell,	H. A. Newbury,	Fair Grounds,	Sept. 20, 21,	410 62	802 76	802 76		
Kewaunee,	Jos. Wilmot,	D. D. Garland,	Ed. Decker,	Kewaunee,	Nov. 23, 24,	105 00	105 00	178 00		73 00
La Crosse,	T. L. Smith,	B. E. Brower,	B. E. Brower,	La Crosse,	Oct. 4 to 6,	137 50	452 00	373 66	78 34	
La Fayette,	J. D. Martin,	G. Cuyler,	E. C. Townsend,	Darlington,	Sept. 6 to 7,	280 75	403 45	403 45		

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La Pointe,										
Manitowoc,	Chas. Esslinger,	Wm. Bach,	Jos. Vilas, Jr.,	Manitowoc,	Oct. 1, 2,	106 00	412 59	405 11	7 48	
Marathon,										
Marquette,	J. Farrington,	J. Edson, Jr.,	C. S. Kelsey,	Westfield,	Oct. 5,	149 00	246 95	158 54	88 41	
Milwaukee,										
Monroe,	A. Kendall,	L. S. Fisher,	Sam. Hoyt,	Sparta,	Oct, 9, 10,	98 00	268 00	138 80	129 80	
Oconto,										
Ozaukee,	Wm. Vogenitz,	H. Boclo,	B. O. F. Kusson,	Cedarburg,	Oct. 8, 9,	200 25	352 79	304 24	48 55	
Outagamie,	W. H. P. Boyan,	J. Stevens,	E. H. Stone,	Appleton,	Oct. 10,	101 25	127 88	123 25	4 63	
Pepin,										
Pierce,	Wm. Howie, V. P.,	S. R. Gunn,	J. H. Southwick,	Prescott,	Sept. 13, 14,	144 00	398 51	398 51		
Polk,										
Portage,										
Racine,	A. Cooper, V. P.,	G. Goodrich,	Wm. V. Moore,	Union Grove,	Sept. 11 to 13,	301 15	705 25	705 25		
Richland,	D. L. Downs,	Wm. Chamberlain,	W. H. Downs,	Richland,	Sept. 21,	195 50	202 00	202 00		
Rock,	J. F. Willard,	J. A. Blomet,	D. M. Lay,	Janesville,	Sept. 18 to 20,		1248 53	1241 54	7 00	
St. Croix,	Otis Hoyt,	S. S. Starr,	J. S. Gibson,	Hudson,	Sept. 18, 19,	113 75	366 50	299 89	66 61	
Sauk,	A. W. Starks,	M. C. Waite,	J. B. Crawford,	Baraboo,	Sept. 19 to 21,	42 00	398 00	397 85	15	
Shawanaw,										
Sheboygan,	Jno. Whiting,	G. S. Graves,	G. W. Barnard,	Sheboy'n F'ls,	Sept. 19, 20,	253 07	584 90	494 27	90 63	
Trempeleau,	G. H. Smith,	G. Y. Freeman,	Chas. E. Perkins,	Galesville,	Oct. 2, 3,	79 00	201 25	166 75	112 64	
Walworth,	O. Preston,	E. Elderkin,	E. Hodges,	Elkhorn,	Sept. 12 to 14,	710 50	2172 64	2071 00	101 64	
Washington,	D. W. Maxon,	J. H. Kleffler,	Wm. Rohn,	West Bend,	Oct. 17 to 19,	207 13	239 70	225 00	14 70	
Waukesha,	Orson Reed,	H. Shears,	R. B. Hammond,	Waukesha,	Sept. 19 to 21,	154 25	980 86	875 16	105 70	
Waupaca,	F. Caldwell,	L. B. Brainard,	L. L. Post,	Weyauwega,	Sept. 13 to 14,	236 25	365 74	293 13	72 61	
Waushara,	Chas. White,	A. P. Hayas,	A. Nash,	Wautoma,	Oct. 10, 11,	167 25	244 79	179 25	65 54	
Winnebago,	M. C. Bushnell,	J. H. Osborn,	J. M. Bull,	Oshkosh,	Sept. 19, 20,	295 06	504 00	504 00		
Wood,										

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FRUIT-GROWERS' ASSOCIATION

OF WISCONSIN.

ANNUAL EXHIBITION.

The Annual Exhibition of this society was held in connection with the State Agricultural Society, and closed the 29th of September.

The State Society's largest tent was devoted exclusively to the use of the Fruit Growers—and under the superintendence of A. G. Hanford and Lady, the internal arrangement was all that could be desired. A table two hundred and ten feet long, by four and a half in width, was erected around the margin of the tent; also a fruit and flower stand through the center, forming table and shelf room one hundred feet long by five in width, enclosing, by their arrangement in the centre of the tent, two rooms about ten feet square, used respectively for the boxes and trunks of the Fruit Growers, and as a reception room for the Ladies and Fruit Committees in attendance.

The display of fruit was the finest and largest the State has ever made. Fruit was also very highly colored, so much so as to deceive many good judges. The list of varieties was very large, and many which have heretofore been classed poor—R. I. Greenings and Baldwins—showed samples which even their native States would fail to equal, should they attempt a competition.

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A principal feature which marked the exhibition over previous ones, was the nomenclature made by the exhibitors. We found, with few exceptions, the labels attached to the plates, and noted or heard of but few mistakes. The eagerness with which visitors were enquiring out the "best" varieties, noting them down, evidenced with a certainty that there was a full determination in the hearts of the people to grow fruit, and "dry up" the old song of "no fruit country."

Our duties during the fair were numerous, and the notes we herewith present are in many respects imperfect, not giving the amount of information we would wish; the principal reason being that we seldom found an exhibitor at his stand. What little knowledge we collected was gained mostly from the fruit cards. We present them as taken at the time, and not in any systematic order:

Nathan Towers, Omro, 31 varieties apples named; very fine specimens of Dominie, Golden Russet, Perry Russet, and Talman Sweting; the largest I saw.

Samuel Charlesworth, Omro, 43 varieties, names upon but few of the plates; specimens good.

J. Kezertes, a plate of "sweet water" grapes—so called by the exhibitor—Isabella would suit them (a dark purple grape) much better.

John Wilcox, Omro, collection of apples, mostly named; samples not as large as many of the collections, but specimens very fine.

Sauk county exhibited, by A. G. Tuttle, Baraboo, 50 varieties of apples, one plate of pears; Fameuse which astonished everybody in size; Bailey Sweet, far ahead of anything we saw; samples in bottles of white grape currants, cherry currants, and gooseberries, (Houghton Seedlings), all very large.

L. Woodworth, Bristol, Kenosha county, 53 varieties named; one plate not named; 12 varieties pears—white Doyenne, Glout Morceau, Flemish Beauty, and Bartlett, deserve special mention for their size and fairness.

Luther Rawson, Oak Creek, Milwaukee county, small show of winter apples; Colverts, Seek-no-further, Golden Russets and Pomme Grise are very fine.

Luther Landon, Waupun, Fond du Lac county, small collection of apples.

Thomas Howland, Pleasant Prairie, Kenosha county, 46 varieties of apples, 16 varieties pears—Onondaga, Flemish Beauty, Bartlett, Seckle, and White Doyenne were rather extra in appearance. Mr. H. has a fine collection of named fruits.

Henry Floyd, collection of winter apples; some monstrous Northern Spy and Dominies, Westfield Seek-no-further, would be very hard to beat; Yellow Bellflower and Perry Russet as fair as could be grown, unless, perhaps, when grown to order; six plates of peaches, grown by Mr. F., would vie with

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Egypt's products in appearance and flavor, and show conclusively what patience and perseverance can do. The whole collection is fine, and among the best—a voice strong with encouragement from and to the north.

Mr. F.'s Roxbury Russets and Northern Spy were so large that the committee pronounced them incorrect. Specimens were left with the Secretary for the winter meeting of the society, when the fruit will be in season for testing.

V. C. Mason, Aurora, Waushara county, has a fine collection of named varieties; notice the Duchess of Oldenburgh, R. I. Greening, Bailey Sweet, and Keswick Codlin were much more than ordinary; three plates of pears—which measured eleven inches in circumference; one plate of peaches, four of grapes, (Catawba nerly ripe). Waushara has done a noble work.

Cooper & Atwood, Lake Mills, 14 varieties of grapes under name—a luscious show, plates loaded to overflowing, and "more under the table." Among the lovers of this delicious fruit they attracted much attention, and they were worthy.

A. Kinney, Whitewater, 32 varieties apples; for the number they were as good as we found.

Rock county collection, by G. J. Kellogg, for Jacob Fowle, 58 varieties; named specimens were good and worthy of notice.

F. Westby, Turtle, 16 varieties named; one plate of monstrous pippins, very fine.

B. B. Olds, Clinton, 32 varieties named; a list which shows much care in selecting.

G. J. Kellogg, Janesville, 48 varieties seedlings; many fair specimens, but none appearing to be worthy of cultivation; exhibited for the "purpose of showing the difference between them and cultivated fruit." Three varieties grapes, Catawba well ripened; seven varieties of pears; sample of Lawton Blackberry; Genessee apple 13 inches in circumference, grown on tree with 100 specimens, 4 years planted, and 8 years from root graft. The show from Rock county was very fine and large; 248 plates, 230 varieties for a Prairie County, is full of interest.

Pierce county, 2 samples of apples.

Mr. Peffer, Pewaukee, 52 varieties named apples: 10 varieties named pears; 11 varieties plums; 4 of grapes; 2 of raspberries; 1 plate peaches; 1 dish cranberries grown upon plants set last spring. Mr. P. considers the Vermont grape the best for general cultivation—perfectly hardy.

W. M. Bartholomew, Lodi, 32 varieties of apples named; Red Spitzenburgh, Utter's Large red, were very large.

J. C. Brayton, Aztalan, 65 varieties named apples; Newtown Pippins, Bellflower, White Gilliflower, and English Russets, were as good as we saw; 1 plate of seedlings.

James Barr, Jefferson, 18 varieties named pears—Duchess d'Angouleme, Louise Bon de Jersey, and Belle Lucrative, were very fine.

O. P. Dow, Palmyra, a small collection selected with care.

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Charles M. Plumb, Lake Mills, 55 varieties named apples; 1 variety pears —specimens looked well.

Lucius Warner, Columbus, small collection of named varieties, mostly very fine.

Plumb, Willey & Co., Madison, large collection of autumn and winter apples under names.

H. J. Starin, Whitewater, 83 varieties named apples; 2 varieties crab, Hislop and Large Yellow; 1 bottle Cherry Currants.

Giles Kinney, Whitewater, 18 varieties named pears.

Charles Hanford, Bradford, 23 varieties of grapes; many were not in a state to be eaten, but his show was good.

W. A. Pierce, Dane county, 17 varieties named apples, *good.*

H. L. Foster, Madison, 1 plate of Flemish Beauty pears, very fine.

J. T. Stevens, Madison, 3 varieties named apples; 1 plate Isabella grapes, 1 do. Diana. The collection was small but created much attention.

A. Murphy, Lake View, 7 plates seedlings, very fine appearance; 3 named varieties.

A. G. Hanford, Waukesha, 74 varieties named apples; 1 seedling apple which promises well; 14 varieties named pears. The collection shows the exhibitor's usual care in selections.

L. Raymond, Milwaukee, 5 varieties apples; 3 of grapes, correctly labeled.

D. H. Clement, Lafayette county, a very fine collection of named varieties of autumn and winter apples.

N. W. Dean, Madison, sweet chestnuts grown on a tree 5 years old.

O. Salisbury, Lima, Rock county, arrived too late to enter for competition his 38 varieties named apples, cherry currants, white grape currants and gooseberries. His show would compare very favorably with some of the premium collections.

Columbia and Jefferson counties contributed 100 varieties each, which were placed upon the tables and attracted no small degree of attention. Much praise is due to the fruit growers of those counties for their interest and pains in thus forwarding so fine and large a collection without the hope of a reward.

Egyptian products were shown in very fine samples of apples, consisting of 35 varieties, by J. A. Carpenter, Cobden, Ill., and a peck or more of the Buckingham variety, by ——, which were probably the largest apples on exhibition. C. Colby, Cobden, Ill., brought in on Friday very fine samples of peaches.

Several samples of seedling fruits were exhibited for premiums offered at the Annual Meeting in Whitewater, Jan. 19th. At a meeting held during the Fair, Sept. 28, Messrs. J. C. Brayton, A. G. Hanford and J. C. Plumb were appointed a committee to examine the same and report.

Dr. Kennicott, of the "Grove," Ill., was present with his

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usual good natured hits, and gave a very instructive lecture* on Wednesday evening, upon fruit culture and varieties.

O. S. WILLEY, *Sec'y.*

ANNUAL MEETING.

The Wisconsin Fruit Growers' Association met at Lake Mills, Jefferson Co., Wisconsin, December 19th, 1860, to hold their annual meeting for the "Discussion upon topics of interest to Fruit Growers, and the transaction of such other important business as might properly come before the meeting."

Association was called to order at two o'clock, by President J. C. Brayton, of Aztalan, in the chair, when, on motion, S. S. Keyes was appointed Secretary, *pro tem.*†

On motion, a business committee of three were appointed by the chair, consisting of S. S. Keyes, E. L. Atwood and J. B. Cooper, who reported as the first subject for discussion, Small Fruits; viz: Currants, Gooseberries, Blackberries, Raspberries and Grapes.

S. H. Kellogg—Prefers the White Grape; would recommend for field culture the Red and White Dutch. Sprouts should be removed once in three years; would not grow them in tree form on account of the borers.

J. C. Brayton—Cherry Currants, most popular and saleable sorts.

O. S. Willey—Cherry Currants are a humbug in my opinion, though for the present very popular; they require more thorough testing. Have proven shy bearers; bunches short and comparatively few berries, though large. White Grape is an acquisition, a good bearer, fruit large and sweet.

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*See Agricultural Report, p. 107.

†On account of the weather the attendance was small from a considerable portion of the State, though Jefferson and Rock counties were well represented. At a "special meeting," held in the City of Madison February 13th and 14th, the same subjects were reviewed by those in attendance, and are here combined as the report of one meeting, for the sake of brevity.

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Worst feature—bush is very spreading and crooked grower. All currants require high cultivation; too much manure can hardly be applied. Prune very close in the Fall, spade the ground six inches deep, cover the ground four inches deep with half rotted stable manure; this answers as a mulch to the roots, and cooling shade to the fruit in Summer. In Fall spade the ground again, and re-cover with the half rotted manure. Always plant in plats, three by four feet, instead of long rows. Black English or Naples, which appear to be identical as cultivated in the West, make excellent wine.

Atwood—For me, Black English is preferable to any other sort.

J. T. Stevens—Believe the White Grape fully equal to the White Dutch, for general cultivation—Cherry too acid and bunch too small.

Chandler prefers the White Gondouin to White Dutch; it's the best of all the Whites. Red Gondouin, not sufficiently tested to prove; does not promise as well as the Red Dutch. Versalaise, best of the red currants grown, received from France; think it will prove hardy. Red and White Dutch, too small, and the cherry too acid; grown many from the seed but get no improvement over the original. Would add the White Grape for extensive cultivation; slow grower, but fruits well. Among the Black, Black Naples is the best.

Stevens—No difference between Black Naples and Black English. Black Naples largest and richest fruit; frequently as large as common cherries. Currants require severe pruning; black ones more than the white or red; know little of Victoria. Cherry needs further *trial* before condemning. The more cultivation currants receive the more fruit; much the easiest fruit grown; will bear in "grass;" but fruit so grown is small; scarcely worth gathering. Mulch in Fall, with stable manure, spade in, or remove it in Spring; don't like to see a garden littered with mulch any more than with weeds.

Chandler—Victoria has a long bunch but the berry is so small that it loses caste. Laversailles, is a very handsome fruit; would add the La Fertiel to the list which promise well.

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Have no trouble in raising currants anywhere; will grow in poor soil; but the richer the soil, the more and better fruit.

J. C. Plumb—Decidedly a northern fruit; farther south does not do so well, but have yet to hear of the location at the North that can't grow them. In regard to varieties and cultivation I concur in the remarks of Mr. Stephens, but don't object to the straw manure mulch and litter, but decidedly recommend it for summer and winter; especially in small plantations set in plats or squares, it is the best mode of cultivation. Would recommend the bush system of culture, and the quadrenial system of pruning, viz: Each year allow three strong shoots to grow from the ground, and cut away all four years old wood immediately after fruiting; this gives six strong three and four years old branches for fruiting, and three more, or the yearling shoots, can be made to fruit the second year by pinching in when two-thirds grown. This is the easiest mode of systematic pruning.

E. B. Quiner—Never saw ground too rich for the currant; mulch and work the ground thoroughly.

Recommended for general cultivation, Red and White Dutch and White Grape. For further trial, Victoria, Red and White Gendemin, Red Grape, Cherry, Long Bunch Red, Knights Sweet Red, Versailes.

GRAPES.

Stevens thinks the Northern Muscadine a good grape, well worthy a place in every garden. Bunches usually large; fruit well set. Diana and Delaware are superior to Isabella in flavor and much earlier; the first being as large. Concord is better in earliness but not in flavor. Diana vines perfectly hardy and good grower; have made growth three-fourth inch in diameter this season. Elsingburgh, a very fine sweet table grape. Clinton, good hardy vine and an abundant bearer, where better ones fail.

Plumb would put the Elsingburgh first in the list of *hardy* vines. Vermont is hardy, and resembles the first in manner of growth. Charter Oak is very nice to look at, but not worth the ground it occupies. All grapes bear better if laid down in

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winter, start better in spring, think Vermont, Elsingburg, Concord and Clinton, are worthy general cultivation for arbor and trellis vines, and when people do not want the trouble of protecting in the winter. Under an improved system of culture, the Delaware, Diana and other half hardy varieties will supplant all the old second-rate sorts.

Cooper has no fault to find with Northern Muscadine, Hartford Prolific, Isabella, Concord or Clinton, all are worthy.

Stevens—Isabella needs protection, would recommend it for half hardy vines. Catawba not to be depended upon as the frost sometimes cuts the fruit off. Diana is sweet as soon as fruit begins to turn; grown it four years; never lost an inch of wood from the cold; ripens about three weeks earlier than Isabella. Diana and Isabella keep well after gathering; no trouble to keep them till Christmas. The reason of so little fruit grown, planters will not care for their vines; all folly to plant any sort unless will well care for it from planting to fruiting; and usually protect in some way through winter.

Atwood—Know of but few sorts I would cultivate sooner than the Isabella; the Isabella, Concord, and Diana will keep through the winter with very little trouble. Lay down all my vines in the fall; not in favor of the short pruning system; trench the ground about three feet deep; mix marsh muck with the soil.

Keyes—The Northern Muscadine to me is the richest grape grown.

Hon. Mr. ——, thinks not one in fifty will take the care their vines require; must have such sorts as require *no care*; farmers wont care to train their vines so long as they can grow wheat.

Willey—Concord is a favorite; has three redeemable traits. 1. Fruit good enough; 2. Early, and 3, Hardy. Clinton and Elsingburgh would only plant as the last resort for the sake of "a grape—no matter what;" Isabella good, but half hardy; hopes for something *very* desirable in the Delaware; certainly promises well. All grapes are usually gathered too soon; most, if not all, require to hang some time after their color is

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shown. But few persons know what a *ripe grape is*. Vines are sometimes pruned too closely; will not bear as close pruning as foreign sorts or native vines farther South. Train to trellis, pinching off all latterals during summer. In August pinch main cane off to ripen wood.

Society recommends for general cultivation Isabella, Concord, Clinton, and Vermont; for further *trial*, Delaware, Union Village, Marion Port, Diana, Rebecca, Northern Muscadine and Elsingburg.

Kellogg—Have failed to propagate grapes from cuttings.

Atwood—It is not necessary to have sandy soil for cuttings; would trench for them and make the soil very fine; leave three buds on a cane, top one, 1½ inches from upper end.

Cooper—Succeeds the best by setting in deep mould.

Willey—Prefers vegetable mould, nearly one-third sharp sand; plants thick in beds four feet wide; rows ten inches distant and two inches in row; mulches thoroughly with half rotten straw; remain on all summer.

LAWTON BLACKBERRIES.

Stevens—Plants all kill; Red and Yellow Antwerp Raspberry satisfies me; protects by covering with loam.

Willey—A humbug as far north as this, or in this climate. A few miles south, but on the lake shore, bears abundantly. Clay soils seem to suit it best, but need draining. Protection with straw of no avail. Growers at the east; plant upon well drained, heavy soil, in rows 3 by 5 feet apart; cultivate with horse.

Quiner—Must adopt a system of protection from our severe drying winds, before we will succeed with many of the fruits; all are benefitted by it.

Chandler—Thought straw protection sufficient for the Lawton, but found my error in losing my first planting; mine are now covered with loam.

Kellogg believes the Lawton worthy further trial, with winter protection.

Plumb thinks it no objection to plant because they require

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protection; all our finer plants, roses, &c., require it. If Lawton's can be grown in Western New York, can see no good reason why they cannot be here. A friend of mine placed large logs parallel, two feet apart, in his garden, planted between them, and was very successful. Adopt some thorough system of summer and winter mulch. Imitate Nature.

Stevens—Would rather go without, sooner than see a littered parlor or littered garden.

Willey—In Western New York their climate and soil is different; Lake Ontario lies at the north and in a great measure modifies their fruit temperature, so that many plants, otherwise tender, are made hardy. The same upon the western shore of Lake Michigan; nowhere does the Lawton thrive better than there; wholly attributable to the water modification of the atmosphere during the winter and spring months.

Quiner—There are several sorts of the wild blackberry equal to any ever saw cultivated; would recommend that fruit growers in the State be requested to select best specimens of wild blackberries, and give them cultivation in yards; giving them a soil as nearly like their native as possible.

Kellogg—Agree in the value of testing our native fruits as thoroughly as possible.

On motion, the recommendation was adopted.

RASPBERRIES.

THURSDAY MORNING.

Quiner—Think the yellow more prolific than the black cap; are hardy; require no protection; make no difference between *semi*-hardy and hardy sorts; so slight is the labor in covering would cover *all*, which it greatly improves. Brinkle's Orange, a very fine sort; butter flavor than yellow Antwerp.

Chandler—All the best sorts must be covered. Richardson, (received from Boston,) promises well; have had it three years; perfectly hardy.

Bell—Not safe to trust any sorts without protection. Black and Yellow Cap will answer for general cultivation, and trel-

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lesis; some finer sorts for amateurs; cut back plants to 3 by 4 feet high, and they fruit well.

Stevens—Yellow Antwerp is very sweet, and an abundant bearer; small plot 10 by 14 feet furnishes a full family supply for table use and preserves.

Kellogg—The Cincinnati Antwerp, an American sort, is perfectly hardy, and the most productive of any red sorts; answers well for general planting without protection; Brinkle's Orange, fine flavored, but very tender.

Keyes—Yellow Cap is more productive and perfectly hardy. Hudson River Antwerp and Franconia are choice sorts, but must be covered in winter. Think the Allen will prove desirable, but not thoroughly tested.

Willey—Cncinnati, Allen and Purple Cane all prove hardy. The last promises to be very valuable. Richardson not thoroughly tested; but wherever known thought much of.

S. D. Carpenter—Have tried many sorts, but never got any fruit till I planted the Richardson, which fruited the first season.

Rosentiel—The Purple Cane is the best sort out of eight varieties tested together; am well satisfied with its qualities; readily propagates itself from the points touching the ground and never suckers.

Plumb—Orange Prolific is an old but excellent variety of the Cap species, with the old but improved Black Cap, and the new Purple Cane, will form a valuable collection of hardy varieties for field culture, which never sucker, as they propagate entirely from the seed, or tip layers, of the present year's wood.

Society recommended for general use, Cincinnati Red Antwerp, Yellow Cap; with protection, Brinkle's Orange, Hudson River Antwerp and Franconia. For further trial, Allen, Richardson and Purple Cane.

GOOSEBERRIES.

Stevens—Whitesmith and Crown Bob are the best English sorts; sometimes mildew; with little trouble can be avoided;

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sprinkle ashes on the bush and arqund it; never use sulphur. Houghton's seedling is objectionable, as it is too rambling; must have a field by itself; can't border walks and beds as with other sorts, and lacks size. Don't want currants on gooseberry bushes.

Keyes—Mountain seedling is the most productive and has finest flavor.

Kellogg—Houghton's seedling does well with me; requires close pruning, well thinning of top and frame or hoop to support branches from the ground.

Plumb—Houghton's seedling, as yet, stands unrivalled in all the good qualities of a gooseberry. A little care in tying up to a rude trellis or support, will secure the enormous amount of fruit it bears, from decay. The Mountain seedling promises exceeding well, but as yet, is too little tested to give it character.

STRAWBERRIES.

Plumb—Great strides are being made in the strawberry culture, in the production of new varieties of great vigor, productiveness, and size; still there seems much inducement for everybody to set some; would set in rows, once in a foot, the rows two feet apart for garden culture and four to six feet in field culture, allowing them to cover a great portion of the ground. Set in the spring; sub-soil the land; no manure, except on the surface; thorough cultivation after the crop is off, and heavy winter mulch of light materials to remain on the ground.

Quiner—Has much trouble with worms in his bed. Light greenish color, one-half inch in length, one third in diameter. Lives upon substance of leaves, leaving the frame; commencing work about the time fruit begins to enlarge and continue till fruit ripens; practices jarring the plant to one side; then kills the worm; would discard Hovey's seedling; can raise Early scarlet anywhere. Wilson's Albany does well; would include Willey for three "best sorts."

Chandler—The worm described appears like the same which often works on the apple tree leaf.

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Cooper—Wilson's Albany is the berry for the million; large and productive.

Kellogg—Early Scarlet and Willey are good bearers; fruit good; plants hardy.

Keyes—Would plant the Hovey seedling with Early Scarlet; one row of the latter to 10 or 12 of the former.

Stevens—Hovey is too local in its success; Wilson's is the best fruiting plant I ever had. Let the plants cover the ground, then dig up alternated strips.

Brayton—Hooker Strawberry is promising well. Hovey is never large unless well cultivated. Deep trenching is very beneficial.

Willey—Strawberries are very sensitive to atmospheric action; either drouth or frost must be avoided. Trench the ground twenty inches deep or more; mix in a liberal supply of leached ashes or lime rubbish; apply a coating of the former to the surface every spring; plant in rows 12 by 18 inches; let the plants cover the ground, then thin—if plantation is large by using fine tooth horse harrow; if in the garden an iron rake will answer. Protect in winter by covering of clean straw, 2 to 4 inches deep; not necessary to remove in spring as plants will grow through it. Wilson's Albany, from its large size, firm flesh and streng growing plants, is the most popular sort; very tenacious of life, and does well where other sorts fail. Early Scarlet, Willey and McAvoy's Superior all do well. Triumph de Grand promises well, but inclines to be more sensitive to changes and rough usage in planting than most other sorts.

Kellogg—Sandy loam soil with a good dressing of peat and ashes is the most natural for the plants; cover the beds always in fall with clean straw, free from weeds, two inches deep; frequently let it remain during the season as a preventative of weeds.

Wilson's Albany, Large Early Scarlet and Willey are recommended for general cultivation; Hovey and McAvoy's Superior added to the above for amateurs; Hooker and Triumph de Grand for further trial.

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THURSDAY—AFTERNOON SESSION.

PLUMS.

Kellogg—Not much experimental knowledge; have failed, first from location, second from cultivation. The Imperial has succeeded best: fault in location—grown on too low ground.

Cooper—Has seen Pond's Seedling doing well in this State.

Atwood—Greatest difficulty is to save the fruit from the curculio.

Brayton recommends sweet elder bushes broken off, and hung in the trees, as a preventative of the curculio.

Atwood—Thinks soap suds, with some assafoetida, injected on the tree by a syringe, a good preventative.

Mr. Cooper recommends for cultivation, Bleeker's Gage and Pond's Seedling.

Mr. Kellogg would add Imperial Gage and Red Diaper.

Mr. Brayton—Lombard, Wahington and Smith's Orleans.

Atwood—Grafted into small wild stocks; succeeded well; grafted early.

Brayton—Set the scion on the west side of the stock, to prevent the wind from blowing it out.

CHERRIES.

Kellogg—Would recommend common Red English and the Morellos. Succeed best in propagating by budding.

Brayton—Belle de Choisey and Reine Hortense do well on dry upland.

Atwood has seen good success by grafting.

Willey—Cherries should be worked only in the Mahaleb stock; Mazzard, too spungy and tender for our western soils. Train trees with low heads, or rather, with no bodies; form *bushes* not *trees*. Early Richmond is as hardy as any fruit known; Plum Stone Morello resembles it in growth and is equally as hardy. Governor Wood, with low head, also succeeds.

Plumb—Would set dwarfs; dwarfs by nature, dwarfs by pruning and dwarfs by propagation. Have lost thousands of

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(prospective) dollars by trying to grow Heart and Bigarreau cherry trees. The Dukes and Morellos (especialy the latter) are alone to be depended upon, and there are enough of them that are first rate to warrant setting largely.

PEACHES.

Kellogg—Trying a few and anticipate success; put them under ground in the fall; that is, cover them sufficiently with dry straw and manure. Trees to be low trained.

Brayton—Curbing with boards and filling with straw, sawdust or dirt, will answer a good purpose.

Willey—Never planted a peach in the West, but have seen them tried in various ways. Training low, bending to the ground and giving earth protection is the best. Planted north side of board fences, where snow will cover and keep off winds sometimes succeeds. Straw is too loose; allows too free a circulation of winds.

Society recommends Yellow Malagatune, Yellow Alberge, Crawford's Early and Late, Early York and George the 4th, with good protection.

PIE PLANT.

Cooper—Strawberry plant is superior in flavor, very tender and makes excellent wine.

Kellogg—Cahoon is much larger than the Strawberry; have the Scotch Hybrid which promises well. To secure good stalks, high state of top cultivation must be adopted; transplant when central bulb becomes hollow, once in three to five years, as it happens; making wine should be put off till late in the season, there being less fermentation at that time.

Atwood—Make wine any time; only requires a dry place to work it in.

Chandler—Linnaeus is the best for the whole season, being tender till frost cuts it off.

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THURSDAY—EVENING SESSION.

PEARS.

Atwood—Would graft into pear stock; very easy to make them grow in thorn stock, but short lived; will take root from scions; recommend standard trees for general culture.

Cooper—One very essential thing in pear growing is to pinch them back.

Atwood—Would pinch them back three times during the summer. By so doing you throw out fruit spurs, and make dwarf trees. Prefer trenched ground. By summer pinching, the wood hardens, and is better prepared for winter; pinch when I think shoot has grown far enough. The Flemish Beauty, Bloodgood and White Doyenne have done the best with me. Do not prune them any with a knife; generally mulch them winter and summer; would prefer a clay soil, let the clay predominate; start the limbs as low as I can get them to the ground.

Brayton—Had a varied experience with pears; my first was on thorn and mountain ash; they grew well and blossomed, but no pears. I found Angers Quince stock to be good to bud into, and the one most in use; those that have succeeded best with me on the Quince stock are Dearborn, Bloodgood, Tyson, Bartlett, Doyenne, and Glout Morceau. My experience with the dwarfs is, that unless they are planted on very fine soil, they should invariably be mulched in the winter; or even in summer and winter, as on that depends their success. Dwarf Pears as a rule are short lived. The sorts which succeed best with me on pear stocks are Tyson, Onondaga, White Doyenne, Belle Lucrative, Winter Nellis and Beurre Diel. If I were confined to but one sort, it would be Flemish Beauty; find it where you will, it is always good.

Plumb—Thinks too deep planting a fruitful source of death to the dwarf pear. Would plant a tree as an intelligent farmer would plant his grain; put its roots near the surface in the warm soil, within reach of the dews. Most of the feeding roots of a tree are within two or three inches of the surface;

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in taking off a heavy mulch often find the surface full of small tree roots; have lifted dormant trees planted too deep, and set the roots two to four inches higher, with the best of results; would set dwarf trees on the surface; bank up sufficient to cover the quince stocks three inches, and always heavily mulch them summer and winter. This will protect the tender quince roots from the changes of the weather.

Atwood—One difficulty with dwarfs is, people let them bear too profusely at first, after which the trees die. Trees should be transplanted at least twice before they go out of the nursery.

Dr. Kennicott—In answer to question: Is anything valuable on the quince? Louise Bonne de Jersey and Belle Lucrative, are nearly twice as large on quince as on pear stocks; will weigh twice as much as when on standards. Plant all the qnince below the surface or you will lose the tree. Protect from water; never knew a tree to die unless water soaked; plenty of trees hardy enough to stand our climate. Flemish Beauty, a No. 1, as standard; only objection—blows off. Mulch before cold weather, and plow up to it to hold it in place.

Willey—Pears require thorough drainage; plant on the highest location; northern or eastern exposures if possible; mulch all the time. In fall, raise a mound of earth well into the limbs; pinch new growth in August to ripen wood; last of March cut back one half or more of last seasons growth.

Onondaga, Plumb—Very hardy.

Hanford—Succeeds admirably, Dwarf or Standard, and not much difference in time of fruiting.

Brayton—Does well on the Pear stock.

Virgalieu.—Dr. Kennicott—Does well, except it gets sap frozen and blights.

Ozane, of Racine—Tree eight years old has done well and is still promising.

Bell—Among the best.

Chandler—Have never lost a tree; practice thumb pinching in summer, and thorough cutting back in spring. Trees but little taller than when planted, but three to four times as large. Mulch thoroughly all the time.

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Early Bergamot.—Plumb—Three weeks earlier than White Doyenne; much earlier than Bartlett; only early Pear that has succeeded to my satisfaction.

Madeleine.—Dr. Kennicott—Blights to death.

Hanford—Does well dwarf or standard.

Ozane—Strong tendency to blight.

Plumb—Standard Flemish Beauty has done as well in every respect, in same locations, as the best of our hardy Apples. Oswego Beurre is very hardy and promises well.

EVENING SESSION IN ASSEMBLY ROOM,

At Madison, Feb. 13, 1861.

Meeting was called to order by J. C. Plumb, who nominated E. B. Quiner, Chairman. The chair stated the object of the meeting, and introduced Judge Knapp of Madison, who spoke for about an hour, (for address see pages following discussions), after which it was

Moved, That a vote of thanks be extended to the speaker for his valuable and instructive lecture; which was unanimously carried.

Mr. Flint—Satisfied that wet feet is the foundation of our failures. Notice that, in flat and level land, trees die, and in high and elevated locations they have succeeded; must pay more attention to drainage; like the method described in the lecture; would make it the basis of action. In all parts of the State where drainage is good, the success is corresponding. There is no mistake but that we can grow fruit. I say on level land the trees die; reason is evident: sun and rain melt the snow—beneath the snow, and on the surface of the frozen ground, is often one vast pond of water; if the ground is thawed, it percolates the surface, soaks and softens the roots; cold freezing weather follows, with a sudden change, the tree is damaged, and death must ensue.

Judge Knapp—In answer to question, "Is it necessary to underdrain with sand subsoil?" Only to dig to the sand. The dying

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on the south-west side is mainly caused by too high trimming and wet feet.

Plumb—This south west side deadness spoken of, is caused by the influence of the warm sunshine upon that portion of the tree during latter part of winter, warming it to softness, followed by severe freezing; the result is, a long frost-crack and dead sapwood. On the flow of sap in the spring, it stagnates and decays, forming a favored depository for the eggs which produce the much dreaded borer; so much dreaded but lives only upon decaying wood. The remedy is obvious: First, low headed trees; plant upon the cool side or smmit of the hill; or bind strips of board, or some other light material on the south side, thus making a "north side all around." This injury is seldom or never found on the north side of the trunk. Frost cracking at the ground may be prevented by heavy banking with earth or mulch.

Mr. Young—Have an apple orchard; trees all healthy and very thrifty, but yet no fruit; want light; we are promised that "the tree shall bring forth its fruit," but mine don't fulfill the promise.

Voice in the corner—There is a "seed time and harvest," he that "endureth to the end" shall gather abundantly.

Mr. Newton—Tried a number of ways; as successful as any is to summer prune. Ten years since planted a large orchard of eastern trees; in less than two years used them all for pea poles. Land slopes to the west; equally divided between sand and clay sub-soil; surface black soil; lost 100 trees; die as much in sand as in clay; don't underdrain, but plant on the ridges; know some sorts fail and others succeed, with no apparent cause.

Quiner—Approve of cutting off a portion of the top to encourage fruit buds. Cut back just before the second period of growth, which commences in or about mid-summer. Root pruning is also very desirable in over-luxuriant trees.

Willey—Over-luxuriant trees or those long coming into bearing, like the Northern Spy, can have their fruitfulness fastened by wringing a portion of the top. Select medium

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sized limbs and remove a strip of bark, one-fourth to one-half inch wide; do this in July or August. Fruit buds will be formed. The wound will usually grow over the following season.

In answer to question by Hon. Armine Picket, of Green Lake County:

When to prune? Plumb—Any time and all the time; do it by littles, but do it mostly with thumb and finger. Best time, just before mid-summer, when trees are growing very fast; cuts will then heal over very soon; cover all large wounds with hot wax. Too severe pruning with knife produces suckers.

Mr. Pitts—Been in the State four years. From others, experience not much encouraged; have planted seeds and got some very fine trees. A neighbor has several hundred trees which look well; raises a mound in the fall about them to keep back the frost in spring. Another neighbor planted ten Rhode Island Greenings—two top-worked and eight root-grafted. The first two are healthy. My observation is, that tender sorts do best worked in that way.

Newton—Once worked 3000 Rhode Island Greenings, would sell them for as many cents; twenty other sorts that are worthless, not fit to keep or to give away. Some sorts do as well root-grafted as top-worked. Grew about one and a half bushels of pears, one of them measured ten and five-eighths inches in circumference; bought it for the Bartlett, don't think it is, but presume nurserymen never lie. Golden Russet, Seek-no-further, Northern Spy and Talman Sweet always succeed.

Quiner—Rhode Island Greening should never be worked in the root, but top-worked. Many sorts will succeed in root as well as top, and *vice versa.*

Mr. —— Have never lost a tree grafted in the top; use seedlings four years old; all do well.

Mr. Flint—Has worked trees both ways, finds no difference. A tree that will not stand working in the root, will not if worked in the top; does not necessarily follow that a hardy tree is made tender by grafting it into a root. If one will but work such

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sorts as English Golden Russet, Red Romanite, Perry Russet, Tallman Sweet, Bailey Sweet, Flushing Spitzenburgh, Fameuse, Fall Strawberry, Fall Wine Sap, Early Red, Red Astrachan, Sops of Wine and Sweet June, the word fail will become obsolete. Sorts more hardy than any seedlings he ever saw; tested a large number of sorts with seedlings, but cultivated ones always came out the best. Sold thousands, as other nurserymen have, that were not worth "shucks," but did the best his knowledge afforded at the time; with the experience nurserymen have at this time, no trouble in getting sorts that will succeed, every time.

Quiner—Too much money is sent out of the State for trees. The soil of eastern nurseries produces an over-thrifty growth of the tree, which does not succeed here; prefer trusting nurserymen west of the lakes.

Newton—Go to the nursery, get your own trees, trust not to tree pedlars; get good trees in nursery of your own selection; don't believe pedlars are honest now any more than ten years ago.

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ANNUAL ADDRESS.

Delivered in the Assembly Chamber, February 13th.

BY J. G. KNAPP, ESQ., OF MADISON.

Mr. President and Gentlemen:

I shall confine myself to the proper soil in which trees can be successfully grown. In doing this, I shall purposely drop all technical, and, to many people, unintelligible names, and so speak as to be understood, if possible, by the masses of men.

Your object is to supply the people of the State not only with the means to beautify and adorn their homes, but also to render those homes as well attractive and healthy, as to supply the resources of nutriment, and the innocent gratification of the appetite; than to which nothing is more conducive than the cultivation of fruits and flowers. I at least do not imagine a more benign object. Tell me not of the fame of the warrior, or the petty success of the politician. Who now remembers the names of the officers, much less of the men, who fell at the battles in the war of 1812? But the orchard planted by the fathers of those men lives green in the memories of the young men and maidens, when year after year they gather the luscious fruit from the boughs, or saunter beneath their shade in the cool of a summer's day, and whisper in all attentive ears, words which none others may witness. So the names of the compromisers of 1820 are forgotten, and so will be forgotten the compromisers of 1861; but he who plants an orchard in 1861 will leave a monument behind which shall last at least a century after he is dead, and make his name as familiar even to the

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school children of his town, as that of the patron saint of the neighborhood.

All fruit trees which can be grown in Wisconsin, require so nearly the same kinds of soil and nourishment, that what may be said of the cultivation of the apple will apply to all others, and I shall confine what I have to say mostly to remarks upon that tree. The apple tree should be grown in ground thoroughly under-drained. No tree is more impatient of wet feet. The apple should find in the soil, besides vegetable matter, silica, (sand), alumina (clay), lime, potash, phosphates and soda, or in other words it requires the same nutriment as wheat and the other cereals. Of these minerals, silica and alumina, must be so abundant or permanent in the soil that the trees may find its supply of food during the long years of its existence; the others may be added from time to time on the surface of the earth.

This being premised, I shall pass at once to speak of the soils in the different portions of the State, with reference to their adaption to the culture of fruit trees. These may be divided for our present purpose into three classes: those in which the underlying rocks are magnesian lime; those in which clay predominates, and the Potsdam sandstone region. A reference to the Geological maps will point out these portions of the State; but as all do not have access to such maps, I shall designate them a little more particularly.

The magnesian lime, upper and lower, covers all the southern portions of the State, having its northern boundary commence on the Mississippi river at LaCrosse, and running to the Wisconsin at Sauk City, thence to Loweville in Columbia county, thence to Marquette on Lake Apuckway, thence down the Fox river to Big Buttes des Morts, thence northerly about twenty miles back from the shore of Green Bay, to the Menomonie river. These lines are by no means straight, but are bent in many places by the elevations or depressions of the country, the highest grounds being capped with lime, whilst the lowest fall into the sand rocks.

The clay tracts are variously interspersed over both the lime and the sand regions; though it abounds most in the counties

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north of Racine, and has its greatest breadth east and west through the middle of Lake Winnebago.

The Potsdam sandstone is developed north of the lime region, with the exception of a small tract lying east of Lakes Pepin and St. Croix, where the limestone prevails. There is also a small tract of sand found in Dane and Green counties, on the Sugar river, and another at the head of the Crawfish, in Columbia, and the bed of the Wisconsin; but these are the intermediate sands, and occupy so small spaces as scarcely to deserve notice in the general estimate.

The lime region must be again divided into the region of the drift, where are found gravel and sand beds, sometimes reaching to great depths, and at others piled into small cobbled hillocks and ridges; and the region where the rocks have not been moved or covered with water since the boulder period, lands which were out of water before the coal fields of Illinois were formed, and have not since been below it. These last regions are embraced in the counties of Grant, La Fayette, Iowa, and the western portions of Green and Dane, and north of them. In these portions the surface rocks show no worn or washed gravel beds, no worn rocks on the high lands, no boulders can be found, nor have the surface rocks been disturbed for a series of times.

I desire to call your attention to one peculiarity in the soil of Wisconsin, which I have not seen noticed by the Geologists of the State. For we are dealing with the soil, and not with the geology in the properly understood acceptation of that term. I allude to a peculiar formation on the surface of the whole limestone country, except some of the hill-sides and bluffs, where the rock and gravel are exposed to view. If the surface soil is removed to the depth of from six to twelve inches, there will be found a substance from two to ten feet in thickness much resembling clay, and commonly mistaken for that mineral, more or less red according to the quantity of iron entering into its composition; a chemical analysis of which will, however, disclose the fact that it contains but a very small proportion of alumina, or clay, and that it is, in fact, nearly all silica, or sand, so finely reduced that it will scarcely polish the cast steel plow of the

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farmer, and at the same time it is nearly impermeable by water. In this latter particular it has the injurious effects of clay itself upon the growth of the fruit trees, by preventing a sufficient drainage for their proper growth. This impalpable formation is in all the limestone regions of the State more or less, and may be found also at some points in the sandstone regions. Wherever it is, the cereals will grow with deep plowing in perfection; and with a proper supply of manure to the surface, the farmer who has such a farm need never despair of a crop, as he is possessed of as many farms as he has feet of this kind of soil.

This is not a proper time or place to give my ideas of its creation, formation, deposit, or whatever it may be called. I am only dealing with the fact of its existence, and pointing out its effects upon the life of the tree. From its impervious character, both to water and the roots of the tree, and its depth, it is unfit as a subsoil in which to grow apple trees, notwithstanding it contains all the elements required for the nourishment of the tree; unless, perchance, it may hold them in too fine a form. Trees planted in it will grow for a few years very vigorously; and probably commence bearing, but after some fifteen or twenty years they will die, in the same manner as their predecessors, the black oaks, have done before them. I am of the opinion that their feet get wet, they catch cold, and die of the quick consumption. This appears plain from the fact that the last year's growth of wood is not much, if any, less than that of any preceding year.

As this formation occupies so large a space of the southern portion of Wisconsin, and portions in which farmers desire to plant their orchards, it is a question deserving careful attention, whether such lands can at all be used for the purpose of rearing orchards. I answer unhesitatingly that it can. This land is the native land of the American crab apple, wild plums and cherries; showing plainly that the surface soil is well calculated for the growth of the choice fruits. Besides the direct evidence arising from the vigorous growth, though untimely decay of the trees planted in this soil after a few years, we have the negative evidence of the flourishing and lively condition of those trees

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which are planted on the gravelly hills and sharp ridges where this formation exists but sparingly, if at all.

This last fact would seem to point every man of the least reflection to the remedy for his decaying trees; to make a drain to let out the water; so that all the trees shall be as well drained as are those upon the gravel hills and ridges. This can be done in two ways: One is to dig a drain through your grounds under every row, and after covering it up, plant your trees over it. But this will be attended with more expense than most farmers will submit to, and if there be no other remedy the farmers will either plant no trees, or they will continue to plant as they have done, and because the trees cannot live under the conditions in which they are placed, the blame is laid upon the country and the climate, when it ought to be laid at the doors of the men who plant the trees.

There is another method of drainage which in most places will be found as full or more effectual than the drain, though I do not remember to have heard of its being practiced by any one: that is, digging a hole where each tree is about to be planted. This can be dug through the formation of which I have been speaking in most places, and especially where it is not over three feet in thickness. The cost of such an excavation can be readily determined, by men who are always demanding the amount of the cost, thus: the surface soil must be removed by the ordinary process of planting trees; there is then no cost for that portion. Below that is a square yard of excavation, all of which can be done with a spade, and will take a smart man an hour to remove it, and another hour to fill it up. This work can be done better and with more advantage weeks or months before the trees are planted than at the time of planting.

The next question is, With what shall the hole be filled? The answer will depend on the condition of whether the excavation is through the apparent clay formation or not. If through it, then I would fill the excavation, if limestones are not at hand, with any surface soil which may lay handiest, after placing at each angle of a two feet square, a round stick of wood not less than four inches in diameter, so that the lower end shall rest on

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the gravel, and the tops shall come within six inches of the surface of the ground, letting the tree stand in the centre of the square. If stones were used, they should be so mixed with the earth as to constitute a drain, which will be done by mingling the stones and surface soil in such proportions as would make a gravelly soil.

If the excavation be not made through to the sand and gravel, then it should not be less than six feet deep in all, and at least three feet of it should be filled with stones, lime stones if they can be got—the smaller the better—over which may be placed a layer of turf, and the hole filled as before, except the sticks and stones in the soil may be dispensed with in this instance. These stones, occupying a cubic yard immediately under the tree, will afford an under-drain as long as the tree shall live, if it be not more than a century.

In the limestone region no other manure will be needed in the planting of fruit trees, than such as is contained in the surface soil. This does not apply to the after culture of the trees, of which I shall speak presently.

This method of drainage by excavation and filling with stones will answer for all the clay soils, as well as the limestone lands, with this difference, that the land should be so selected and cultivated, that the holes under the trees will never fill with water, if it can be prevented by surface draining.

I come now to speak of the next great region of country into which the State is divided—the sand region; and to answer the question which is frequently asked, "Can fruit be raised on these sand lands in Wisconsin?" To thia question I answer unhesitatingly, yes. All the ridges where the rocks occasionally crop out and both straight burr and white oaks flourish, contain clay in the soil formation, and on these, apples and other hardy fruits will grow, if it be under-drained, as well as in any portions of the State. Fruit trees can be raised on the sand ridges, in the following manner, and I choose an extreme case: A white or yellow sand ridge, the native home of the black jack oak, and where hickory pine flourishes or rather

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endeavors to grow, land in which the water never rises to within six feet of the surface, and the surface when once broken so loose as to drift before the wind; and if it were not paradoxical, I might say that no matter how wet it might be, it would always be dry; or in other words no thunder shower or drenching rain storm could ever wet it.

To plant an orchard here will cost more labor than on the lime region, or the white oak ridges, of which we have before spoken, but not so much that the farmer need despair of success. The proper materials for planting in this case may be a little farther off, but not so far as many suppose. This ridge soil is destitute of vegetable matter, lime, phosphates and potash; and these must be supplied. Men should learn, if they have not already done so, that if the proper materials of soil are not where they would have them, then they may have these by sufficient labor; and it is their duty to perform this portion of the work. I would plant trees in such soil in this manner: Remove the surface as in the lime region, and then excavate a hole, at least five feet across and three feet deep, and as the earth removed would be of no use on the land it had better be carted off. This hole should then be filled with a soil prepared in the following manner: A cubic yard, or what is the same thing, a good wagon load of black soil, which can be found abundantly in the low grounds near by, should be taken out of its bed as early in the summer as the first of August, and placed on dry ground and remain there until it will pulverize with the shovel; a good freezing during one winter will improve it. This yard of soil should receive at least a peck of fresh lime and half a bushel of clay. The latter will be best prepared for mixing by removing it from its bed to some dry place, and if it be kept dry it may be reduced to small particles, or even powder, and in that condition stirred into your compost. Compact muck should not be chosen as it will take at least a year to become thoroughly rotten, and even then it would be too stimulating; black soil is the material which is wanted and which can often be found fit for use. Having prepared the soil, and carted it to the place where it is to be

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placed, commence filling the hole, mixing it at first half and half with the surface sand, increasing the quantity of sand as the hole is filled up, using it all up by the time you reach within six inches of the surface. The best clay will be found on the white oak ridges, but there is no need of great particularity in making the selection. The whole cost of planting one hundred trees in this manner need not exceed fifty dollars, and it will give the farmer an orchard on ground where an apple could not possibly be grown without such planting or its equivalent; and trees thus planted would thrive as well or better than in any other portion of the State.

This imitation of soil in which we propose to plant trees is nearly identical with the surface of the ground in which the wild plums, grapes and crab apples are found; thus plainly teaching what is needed to produce the orchard fruits, with this difference: that the latter will have a perfectly drained soil, so that the trees will live and thrive, when generations of the wild fruits shall have died and decayed by reason of their wet feet. Is the result worth the experiment? Let the farmers, the gardeners and amateurs, answer by their works.

But, gentlemen, the first planting of an orchard is not enough. Plant it never so well, and then leave it, and it will not give you fruit as it should do. It then requires trimming, manuring, dressing and watching. Destructive animals, birds and insects, must be driven off or killed. Here the field, however tempting it may be, is too wide for me to enter and review, or for you to hear about at this time, and I forbear; and shall only speak of one of the subjects—manuring. We will only imitate the gardener in Holy Writ; we will dig about the tree and manure it, and see if it will not bear fruit.

All fruit trees and grape vines require the same manures as wheat, and as much or more of it; all of which may be applied to the top soil, when the tree has once been planted as it ought to have been. The tree in its growth wants potash, phosphates, lime, soda and vegetable matter. The latter may be supplied by a coating of barn-yard manure, muck, peat, leaves, corn-stalks, hay or straw, valuable in the order named; all of which

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should be dug slightly into the surface, so as to feed the surface roots, and as far as the roots desire to feed, which in a tree of ten years' growth will be at least a rod in every direction; in other words, such an orchard wants a complete dressing of manure over its whole surface every year.

The amount of soda required is very limited, and may be supplied by sowing in the early spring, once in two years, say, a bushel of salt to the acre, or better by a process I will shortly name. But in potash, phosphates and lime, our sandy land can scarcely get too great a supply. How these can be supplied without too great an expense, is a question of no small importance. Let me assure you they can be obtained in abundance far cheaper than most people believe; and I propose to give a brief description of a very cheap method of procuring a full supply of these manures for any ordinary sized farm, not to say orchard alone. In doing this, I purposely omit describing that most valuable of all fertilizers, and manures, *poudrette*, which every house-keeper ought to make, or have made, and every farmer and gardener use, as well on account of the health of the country, as for the increased productions it would afford.

To prepare a special manure, procure a hogshead, (crockery or sugar will answer,) set it up the same as if you were going to make a leach for ashes; *secondly*, you want every bone you can find on the farm, no matter how old or new it is; and *thirdly*, you want all the wood ashes from the stoves and fireplaces, and the materials are ready for the work. If you have not material to fill the hogshead at one time, put in what you have on hand, and fill up as the material is made. Begin your work by placing a layer of two inches of strong new ashes in the bottom of the hogshead, and covering it over with bones, as nearly even as possible; then put in another layer of ashes, followed by the bones, and so on, until the hogshead is filled to within six inches of the top. All should be so far packed that there would be no open spaces under the bones; and the ashes may be dampened as they are put in, but not enough to leak. Take care that the bones do not touch the sides of the hogs-

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head; and the last six inches of the top should be filled with ashes alone. The whole should be left under cover, but yet so kept that the air may have pretty free access to it. This mass of bones and ashes must be kept moistened with water for at least six months, and no matter if it be a year; and should it leak, the ley ought to be turned back. Should you mix in the mass a few pieces of iron pyrites, or place on the top at times sulphur, plaster of Paris, or copperas, you may water the mass with human urine, and so save the richest manure yet discovered. The pyrites, sulphur, plaster of Paris, or copperas, should be just so much as would prevent the ammonia from escaping. When one hogshead is filled, another may be set up, and filled in the same manner. Your work is now done for six months, except to take care of the watering and cover. The work will go on almost as well in winter as summer.

At the end of six months, or more, as convenience and work permit, if the work has been well done, and the ashes are good, you will see the result. The oil and gelatine of the bones will all be taken up by the potash, and the bones will be so soft as to be readily cut by the shovel, or broken with a wooden maul. The whole mass should now be removed to a board floor, the bones pulverised, and all mixed, and put away in a dry place for use. It will improve by age, and especially if occasionally shovelled over, and a little salt, say a pint to a bushel, may be added, once. When the mass shall become perfectly dry by the action of the air, it will consist among other things of the following materials: the earthly materials of the ashes, consisting of siliea, alumina and lime, which will help to give consistency to the sandy lands, pure potash, nitrate of potash, or saltpetre, urate of potash, phosphate of potash, phosphate of lime, sulphate of potash, sulphate of ammonia, uratephosphate of ammonia, chlorides of potash, lme and ammonia, with some other salts, in small quantities, every one of which will be in a proper form to enter into the composition of vegetable beings. On the whole, the mass will be not much less valuable than the celebrated Peruvian Guano, in its manurial qualities.

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One half peck of this composition upon the most sandy soils of Wisconsin, will be an abundant supply for a ten-year-old appletree, and should be scattered annually over and dug into the soil in which the tree feeds.

In the limestone regions it will be needed but sparingly, if at all, where the roots of the tree can penetrate among the limestones, as there will be a supply of lime from that source, until the trees have attained considerable age.

But potash is required on all lands, and must be supplied annually. The quickest, cheapest and best way to do this is to wash every part of the tree you can, in the spring just before the buds burst, with a ley from wood ashes, strong enough to set an egg on end when dropped in it; and if an ounce of salt be added to each pint of ley, it will greatly improve it. This can be put on with a common white-wash brush; a dry day is better for this purpose than a wet one, as it will give the washing time before it is washed off by the rains, to consume all the *cocci*, or scales, and the eggs of the aphis, or green lice. The result of this wash will be perceptible not only in the fresh appearance of the bark of the tree, freeing it from all mosses and decaying scales, but in the freedom of the tree from insects, and an increase in its growth. There is scarcely an insect which preys on the tree, either in the root or branch, which will not be destroyed by this wash. And it is just the manure the tree requires for its own support. There is no fruit tree or shrub in the garden or orchard, of perennial growth, which will be hurt by it, unless it be too strong. It should not float an egg, nor have too much salt in it.

Considerable potash may be supplied to the ground by covering it with a coating of fresh leaves in the fall; this would also form an excellent manure for the support of the tree. Although it is true that that the young trees of an orchard before their roots intermingle, will get sufficient food in the rich virgin soils of most parts of the State, yet this will not be true after that period, and especially, where the land has been exhausted by cropping, during the period of their growth. When the roots have intermingled, or if crops are raised, the

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soil will require a large annual supply of vegetable manure. As soon as the branches of the trees begin to interlock, all danger of overgrowth is past, and the amount of manure may be varied somewhat according to the means of supply, especially when we remember the propensity of men to pasture or mow the orchard.

What I have said of the cultivation and preparation of ground, will be found equally applicable to the cultivation of the smaller fruits, including the pie plant. They can scarcely receive too much manure for their successful cultivation. I should be glad to say more of these too much neglected fruits, yet am admonished that I must leave them, with the expression, that no portion of the farm will pay so well for the labor bestowed as will these fruits, small as individuals, but large in the aggregate.

I shall call attention to but one more mineral, which cherries, plums and peaches require in considerable quantities, and apples somewhat; that is a supply of iron. This mineral is necessary for the production of the kernel of the fruit. Its supply is readily obtained by placing pieces of scrap iron in the surface soil, or by emptying the mud from the grind-stone box near the trees; and if copperas (sulphate of iron) be used, with the bones and ashes before spoken of, that will make the necessary supply. The amount required is very small, and most soils already contain about enough.

The best natural locations I know of for the apple are the rugged Baraboo Bluffs and the Blue Mounds. Then follow, those places having the same geological formations and soil, as nearly as may be; and next the gravel ridges and hills lying east of them. And I am certain that the day will come, when the orchards upon these localities, which are now overlooked, and left untouched and unproductive, will yield a supply of apples almost fabulous for their amount. Apple trees can find the way for their roots among the rocks of these regions as well as the native white oaks have done in former days.

I would impress upon every one the importance of avoiding the low land and warm sunny aspects, for the large fruits; choose,

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on the contrary, high, airy locations, above the frost point of late spring and early fall.

With such lands, culture and manuring, as I have in part pointed at, we have no need of a removal to a more southern clime. Without these it is of no use to plant any tree, shrub or vine, with an expectation of procuring fruit. If the Garden of Eden did not yield its fruit unless it was dressed by the hand of Adam, men cannot expect, after thorns and thistles have become indigenous to all soils, after noxious weeds and destructive insects and animals have filled the land, to reap a rich harvest of fruits, without the labor of care and cultivation.

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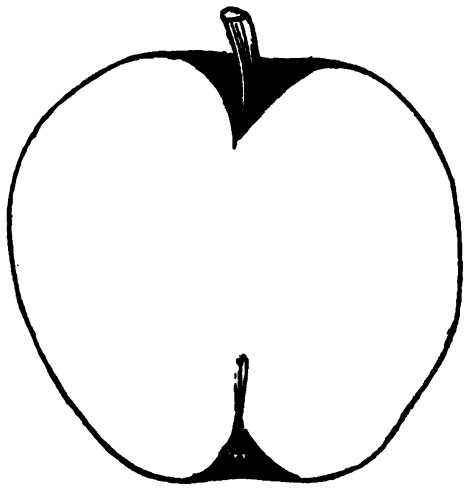
DESCRIPTIVE LIST OF APPLES.

BY J. C. PLUMB.

Those preceded by the * are from the Amateur, or Half-Hardy List; all others are well tested and approved.

RED ASTRACHAN.—Tree, vigorous grower, short, stout shoots, large foliage, moderate bearer; fruit, large, roundish, nearly covered with deep crimson, and a thick bloom like a plum, juicy, rich acid; one of the most beautiful of apples. August.



CAROLINA RED JUNE.

*CAROLINA RED JUNE.—Tree, slender, upright grower, half hardy, bears young; skin, smooth, deep purplish red, with light bloom; flesh, very white, fine grained, tender, pleasant sub-acid flavor; soon after early harvest.

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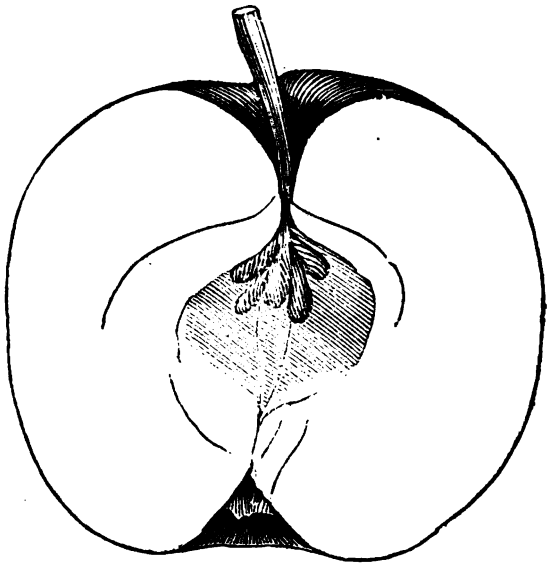
*Early Harvest.—Tree, a vigorous grower in the nursery, but of dwarfish habit in the orchard, good bearer; fruit, medium to large, round, pale yellow, rich, sub-acid. Last of July to August.

*Early Job.—Tree, slow, upright grower, profuse bearer; fruit, small sized, deep red, showy; stalk, medium length, cavity large, russeted; calyx, closed; basin, moderate; flesh, whitish, tender, juicy, very agreeable, vinous flavor. September.



FALL STRIPE.

Fall Stripe.—Vigorous, beautiful grower, extremely hardy, great and early bearer; fruit, medium size, nearly round, uniformly fair, tender, aromatic, sub-acid flavor, which takes everywhere; season, August and September; for family and market; unequalled in all qualities of tree and fruit by any of its season.

Summer Golden Sweet.—Tree, strong grower, spreading, productive; fruit, medium to large, round, pale yellow; stem, long and slender; flesh, whitish, very tender, juicy, sweet; excellent dessert apple. Latter part of August to middle of September.

Early Pennock.—Upright, vigorous, slender, forming a

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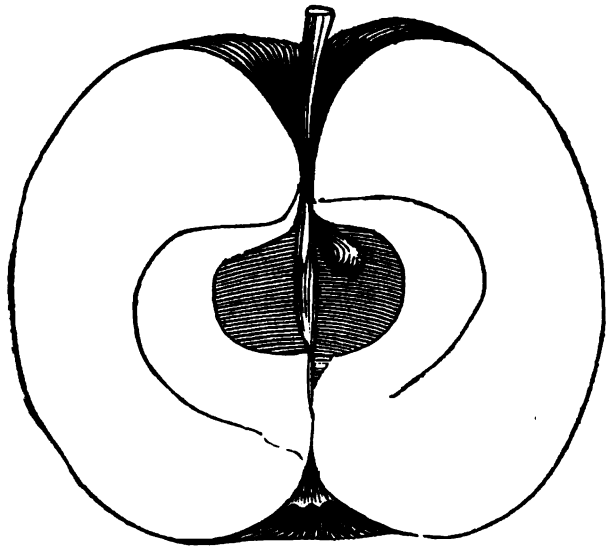
medium sized orchard tree, bears young and profusely; fruit, medium to large, conical, light yellow, striped and specked with light red; stem, short; cavity, large; calyx, closed, in a narrow plaited basin; flesh, whitish, tender, sub-acid, good and showy. September.

SWEET JUNE.—Tree, upright, vigorous, light-colored wood, productive; fruit, medium, roundish, greenish yellow, with dots; stem, slender, calyx, closed; flesh, yellowish white, tender, juicy, sweet; very good dessert apple. August.

*EARLY RED.—Tree, vigorous, upright, thorny, very dark, smooth wood; we have not found it an early bearer; fruit, medium size, round, red and striped, often dark red; flesh, white, stained with red, tender, pleasant, sub-acid. First of September.

*SUMMER ROSE.—Rather slow grower, spreading, good bearer, with age, fruit medium, roundish, pale yellow, red cheek, tender and delicious; has a most beautiful waxen appearance. Last of August.



DUCHESS OF OLDENBURGA.

DUCHESS OF OLDENBURGH.—Very vigorous, upright grower in the nursery, but becomes spreading and pendulous in the

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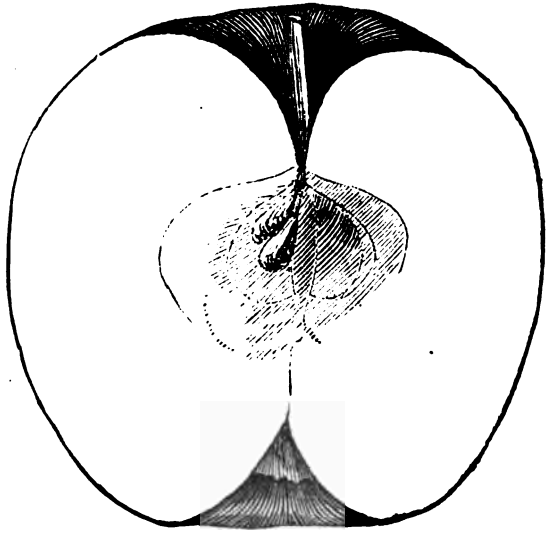
orchard; young, constant and abundant bearer; fruit, large, round, slightly flattened, greenish yellow, striped with bright red, covered with a bluish bloom; stem, medium, set in a deep, narrow, irregular basin; calyx, small, closed, in a wide, shallow basin; flesh, white, tender, brisk tart, fine cooking. September.

* Cole's Quince.—New and untested, but promises well on very dry soils; great grower, good and constant bearer; fruit, large to very large, flattish, conical, ribbed, bright yellow; flesh, very tender, of a mild, rich acid, quince flavor. August and September.

Sops of Wine.—Tree, vigorous, upright, early bearer, and productive; fruit, medium, roundish, yellow and red, shaded with dark red, with yellow specks, whitish bloom, stem slender; calyx, with broad segments, basin slightly furrowed; flesh, yellowish, stained with pink, juicy, mild, sub-acid, good. September.



AUTUMN STRAWBERRY.

Autumn Strawberry.—Tree, vigorous, upright, hardy and productive; fruit, medium size, slightly oval, red striped and splashed on green; stem, long slender, cavity narrow, deep; calyx closed, in narrow deep basin; core, small, seeds large,

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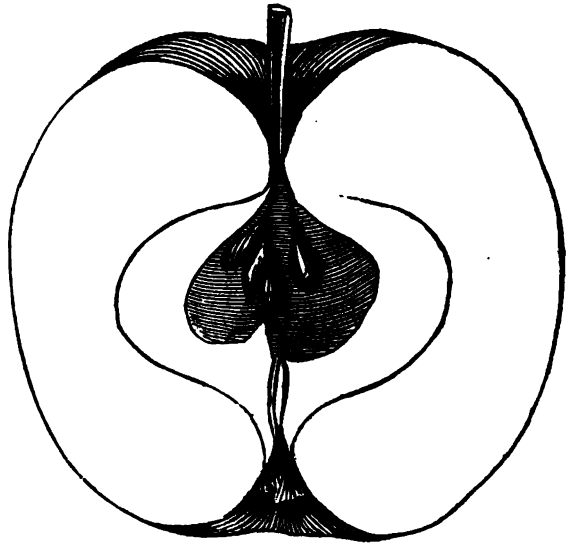
black; flesh, white, fine-grained, tender, juicy, sub-acid, good but not high flavored. September 15, October 20.

*St. Lawrence.—Tree, vigorous, with very dark colored wood, upright in the nursery, spreading and productive with age; tardy bearer; fruit, medium to large, flattened, pale yellow, striped and splashed with red and crimson; stem, short, cavity wide, deep; calyx, closed in shallow basin; core, and seeds small; flesh, white, fine grained, tender, juicy, sub-acid, excellent. October and November.

Benoni.—Tree, vigorous, upright, slender; fruit, medium, roundish, conical, yellow striped with red and crimson; flesh, yellow, tender, juicy, sub-acid. September.

*Cranberry—Tree, very vigorous, irregular spreading; stout reddish shoots, with scattering whitish specks, difficult to grow "handsome," except as a dwarf; very hardy and productive; superb for the garden; fruit, very large, round, flattened, conical, greenish yellow, with bright red stripes and blush; stem, short and thick, cavity wide, deep and smooth; calyx, closed, basin shallow; flesh, white, fine grained, tender, juicy, brisk tart; excellent cooking from June to September.



FAMEUSE.

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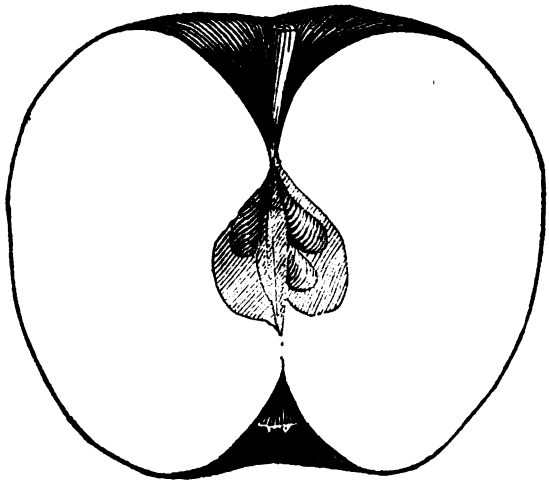
FAMEUSE.—Hardy, vigorous, spreading, early and constant bearer; fruit, medium size, round, striped on green, often brilliant blush in the sun; flesh, white, tender, juicy, delicious, aromatic sub-acid. November to February.

The specimen from which the above drawing was made, grown by A. G. Tuttle, of Baraboo, measured 9½x9¾ inches in circumference; a most beautiful specimen of this valuable fruit. Mr. T. claims for this "best of its season," and he has grown some of the finest autumn fruit exhibited at our fairs.

SUMMER QUEEN.—Tree, grows rather irregular with a large spreading head, half hardy; fruit, large, conical, striped and clouded with red; rich and fine flavored. September.

*KESWICK CODLIN.—Tree, erect, and very vigorous, moderately hardy, bears when quite young, and abundantly; fruit, large, oblong, ribbed, pale yellow, acid; excellent for cooking from July to October.



FALL WINE SAP.

FALL WINE SAP.—Tree, very vigorous, irregular grower; forming a beautiful orchard tree, with many pendulous branches; wood, a dark brown, with many greyish patches after two years old; leaves, large and broad, many of them remaining on the

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tree till mid-winter; very hardy and productive; fruit, medium size, round, conical, pale green, often bright blush on sunny side; stem, medium, cavity, wide, smooth, deep; calyx, closed; basin narrow; core, small, seeds large, flat; flesh, white, tender, juicy, mild, vinous, good. October to January.

SWEET PEAR.—Tree, a stout, vigorous grower, very hardy and productive; fruit, medium size, slightly conical, fair and smooth, greenish yellow, with fine blush on sunny side; stem, stout, in wide, deep cavity; calyx, small, closed, shallow, narrow basin; flesh. white, tender, juicy, not rich. September to December.

PEAR SWEET.—Tree, moderate, upright grower, very hardy; tree, foliage and fruit resemble the pear in appearance; fruit, small, round, oval, depressed at the ends, rough, yellowish, russet skin; faint blush; flesh, yellowish white, very firm and rich. September. Will prove valuable on rich soils for stock and baking.

DRAP D'OR.—Tree, slow grower in the nursery, but forms a vigorous, spreading tree, with slender shoots, in the orchard; fruit, large, flat, yellow, with small russet specks; flesh, tender, sub-acid, good for cooking and dessert. October to December.

*UTTERS.—This splendid fruit was introduced into Dane County some twenty years since, and some years later into Jefferson County, from Illinois, but seems to have been lost sight of there, not being recognized when presented at their exhibitions. Tree, vigorous, upright grower, redish grey wood, sheds its foliage in September; in the orchard, productive and quite hardy; fruit, large, round, flattened, mostly white, with some red stripes, very regular, smooth and beautiful; flesh, white, fine grained, firm, juicy, tart, good. September to December.

*JERSEY BLACK.—Tree, very strong, upright grower, with stout shoots, hardy and productive; fruit, medium, conical, mostly red upon green; flesh, white, fine grained, tender, mild Seeknofurther flavor. November to January.

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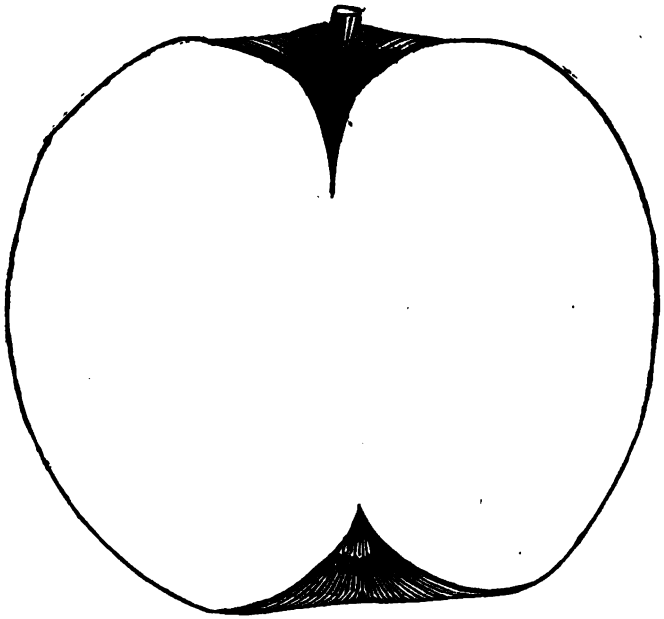

BAILEY SWEET.

BAILEY SWEET.—Tree, vigorous, upright grower, hardy and productive; fruit, very large, ovate, deep red; flesh, tender, rich and sweet, a very beautiful and excellent apple; scarcely equalled by any sweet apple of its season. November and December.

COLVERT.—Hardy, vigorous, upright, forming a vigorous orchard tree, productive; fruit, large, flattish, angular, obsided; greenish yellow; stem, short, thick; core, large; flesh, greenish, coarse, sub-acid. September to November.

WESTFIELD SEEK-NO-FURTHER.—Hardy vigorous, productive with age, medium size, slightly conical, yellowish with dull red stripes; flesh, yellowish, tender, fine grained, mild, aromatic peculiar; a general favorite. November to March.

VANDEVERE.—Tree, a fair grower and good bearer; succeeds best on light, warm, clay soils; fruit, medium size, yellow, striped with red and becoming crimson next to the sun; flesh, yellow, rich and fine. December to March.

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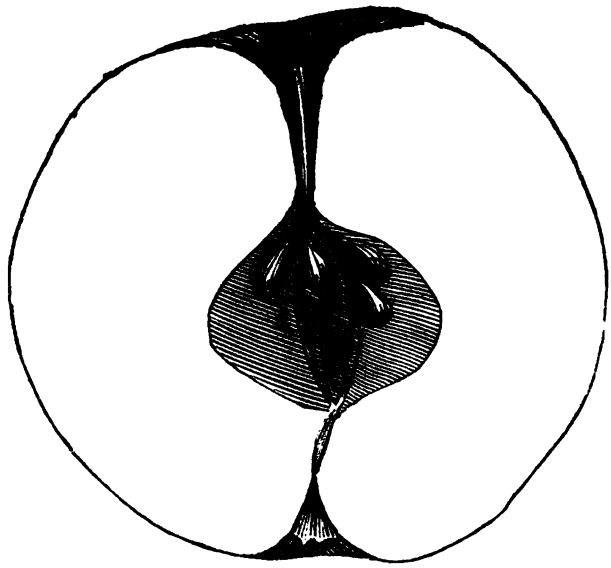

CIDER.

CIDER.—Resembles the St. Lawrence tree, but more vigorous, great bearer, very hardy and productive; fruit, large, oval, medium sized, red striped; stem slender, in a very narrow, deep cavity; calyx, small, closed, slight basin, core medium; seeds many, small; flesh, white, tender, brisk, sub-acid; excellent cooking and eating. September to January. It promises to become one of the few completely successful in the rich soils of the West. Has been cultivated by the writer for the last seventeen years, supposed to be some old variety by some, but has not yet been identified.

YELLOW BELLFLOWER.—Tree, good grower on strong soils, becomes drooping in the orchard, tardy bearer; fruit, medium to large, oval, conical, rich lemon yellow, with many specks, sometimes faint blush in the sun; cone large, open; flesh, yellowish, fine grained, firm, rich, tart, excellent cooking, good eating when fully ripe. December to March.

POMME GRISE.—Strong upright grower in the nursery, forming a medium sized, round headed orchard tree, hardy and very productive; fruit, small, flattened, greyish russet, bronze in sun;

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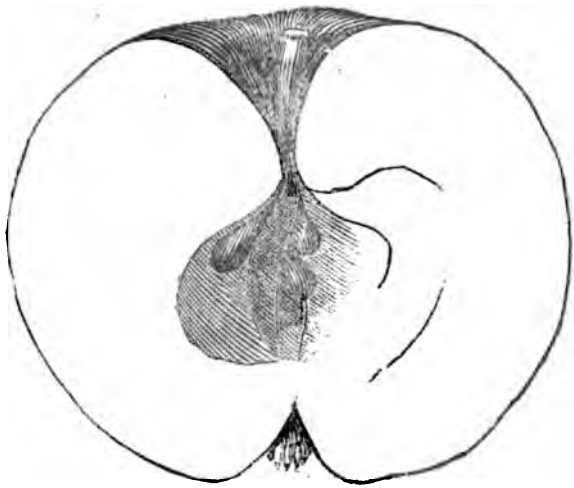
a delicious and high flavored little dessert apple. December to March.

WINTER WINE SAP. (Wine Sap of Elliot.)—Very vigorous, hardy, spreading grower, distinguished by its polished, dark colored wood, successful on all soils; fruit, medium to small, conical, mostly bright red; flesh, fine grained, tender, juicy, sub-acid. January to March.



SWEET WINE

SWEET WINE.—Tree, very hardy, upright, strong grower, with wine colored bark; good bearer with age; medium size, round, dull red blush on greenish yellow; flesh, white, tender, good eating, cooking and stock apple. In use through the winter.

NORTHERN SPY.—Tree, moderate erect grower, requires dry soil and high culture, tardy bearer, but productive with age; fruit large, round, striped, becoming brilliant at full maturity, delicately coated with bloom; stem, short, in a wide, deep cavity; core, small, round, seeds small; flesh, white, fine grained, firm, juicy, sub-acid, retaining its freshness of flavor and appearance till June.

CANADA BLACK.—Tree, very vigorous, upright grower, dark wood, with many small shoots, extremely hardy and productive with age; fruit, medium to large, oval, green mostly covered with dark red; stem, short, thick; cavity, narrow, shallow, calyx

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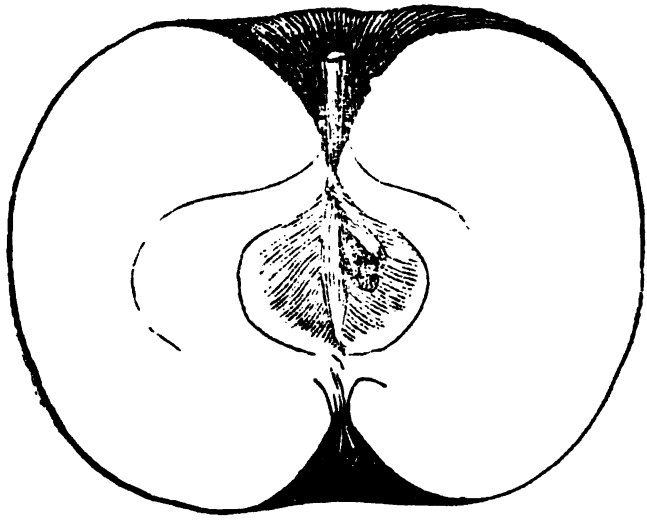
small, closed, basin narrow, plaited; core, oval, seeds large, black, flesh coarse, greenish, streaked with pink, firm, juicy, mild, good. January till spring.

TALMAN SWEET.—Tree, vigorous, spreading in the orchard; very productive; fruit, medium size, pale yellow, with shade of red in the sun, and often one or more brownish lines running from stem to calyx; flesh, firm, rich and very sweet, excellent baking and stock apple. November to April.



PERRY RUSSET.

PERRY RUSSET—(SYN. GOLDEN RUSSET.)—Tree moderate grower, with redish, brown wood, beautiful and spreading in the orchard, but good nursery tree as it loses nothing by going backward, and has no waste wood if properly summer-pruned by the hand.

It was formerly introduced into this State from Western New York, under the above names, but seems to have been lost sight of by Eastern fruit growers.

It finds a congenial home in the rich prairie soils of the North-west, to which, its extreme hardiness and uniformity of growth seem adapted.

Fruit above medium size; nearly round, often little flattened conical; color yellow, evenly russeted with many specks and

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occasional russet patches; stem short; cavity medium, thickly russeted; calyx small, closed; basin regular, narrow and deep; core small, seeds few; flesh yellowish white, compact but tender, juicy, mild sub-acid.

It is less saccharine than the English Golden Russet, much finer in appearance, nearly twice as large, more tender fleshed, and more valuable as a dessert fruit than the latter, and equally hardy. In common with all the russets, it is liable to wilt unless kept in a cold place.

The specimen from which we made the above drawing was grown by Wm. Bartholomew of Lodi, a very successful fruit grower, who says, "three year old trees come into bearing about three years from setting, and are every way among the best."

English Golden Russet.—Tree, a fine grower, spreading, with slender, light colored, speckled shoots, *by which it is known from all other russets*; good bearer and very hardy; fruit, medium size, dull russet, with a tinge of red on the sunny side; flesh, greenish, yellow, crisp, juicy and high flavored. November to April.

*Herefordshire Pearmain.—Tree, vigorous, slender growth; requires good rich soil, but must be very dry; on high ridges, or bluffs, it will succeed finely; quite tender while young, but becomes hardy, spreading, and very productive in favorable situations in the orchard; fruit, medium, roundish and conical; color yellowish green, mostly covered with brownish red, mottled and striped; flesh, yellowish, fine grained, firm but tender, mild, aromatic, of highest excellence. January to March.

Dominie.—Tree, strong, vigorous grower, early and great bearer, very desirable and profitable where it succeeds, requires very dry soils; fruit, medium to large, flat, greenish yellow with stripes and splashes of bright red and russet specks; stem, long, slender, and inclines to one side; cavity, wide; calyx, small; basin, broad; core, medium; seeds, abundant, purplish-brown; flesh, white, tender, juicy; very good. November to April.

Willow Twig.—Tree, moderate grower, slender shoots, re-

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quires strong, heavy soils, especially adapted to rich prairie, (see Elliot's Limber Twig,) productive; fruit, large, roundish, tapering a little to the eye, light yellow, striped and splashed with red in sun, rough russet specks, and occasional patch of russet; stem, long, slender; cavity, open, funnel-shaped, russeted; calyx, rather small; basin, irregular, round; core, large, hollow; seeds, plump, pyriform; flesh, whitish, tender, sub-acid; very good. Keep to May.

RAWLES' JANET.—Tree, good grower in the nursery, but dwarfish habit in the orchard from profuse bearing, often escapes spring frosts from its tardiness in coming into bloom; valuable for its productiveness and long keeping qualities; fruit medium size, round conical, dull red, striped on green; stem short, thick; cavity, wide, deep; core, and seeds small; flesh yellowish, firm, juicy, pleasant, mild, almost sweet in the spring. January to June.

*BLACK VANDEVERE.—Tree, fine grower and exceedingly hardy, yellowish slender shoots, productive; fruit, medium size, round flattened, angular; stem, short, cavity wide; calyx, large, open, basin shallow; core, small, seeds large, broad, dark color; flesh, greenish yellow, firm, rich, mild, second rate. March to May. Its vigor, hardiness, productiveness and long keeping qualities make it desirable for some localities.

*CHRONICAL.—New and untested, but highly recommended by the party who introduced it from Indiana. Tree vigorous and hardy; fruit, keeps well to July.

*DUMELOWS.—A foreign variety, found very valuable after twelve years trial in this State. Tree, strong spreading growth, stout speckled shoots; very hardy and productive; fruit, medium, round, always smooth and fair, pale yellow with delicate blush at maturity; stem, short, small cavity; calyx, large, open in a shallow basin; flesh, white, fine grained, semi-transparent juicy, brisk tart, which it retains till June; this unusual quality will render it popular.

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SEASON LIST IN FOUR DEPARTMENTS.

No. 1. Extra hardy List of good varieties in use from July to Spring, found successful in the valleys and undrained soils, if well ridged with the plow. *Descriptions found on previous pages.*

1—Red Astrachan,
2—Fall Stripe,
3—Sweet Pear,
4—Fall Wine Sap,
5—Sweet Wine,
6—Canada Black,
7—Talman Sweet,
8—Perry Russet,
9—English Golden Russet,
10—Red Romanite.

No. 2. Hardy List of excellent varieties in addition to No. 1, of early and long keepers, for elevated well-drained locations, of any aspect, and for rich soils. *Descriptions found on previous pages.*

11—Sweet June,
12—Summer Golden Sweet,
13—Early Pennock,
14—Duchess of Oldenburg,
15—Sops of Wine,
16—St. Lawrence,
17—Aut. Strawberry,
18—Benoni,
19—Fameuse,
20—Colvert,
21—Bailey Sweet,
22—Cider,
23—W. Seeknofurther,
24—Vandevere,
25—Yellow Bellflower,
26—Pomme Grise,
27—Winter Wine Sap,
28—Northern Spy,
29—Willow Twig,
30—Rawle's Janet.

No. 3. Half hardy and tender List, which are No. one in quality, but require high ground, well drained, and medium soil, with cool aspect. July to Spring. Those followed by * found in descriptive list.

31—Early Harvest,*
32—Red June,*
33—Summer Queen,*
34—Keswick Codlin,*
35—Maiden's Blush,
36—Pumpkin Sweet,
37—Hawley,
38—Fall Pippin,
39—Twenty Ounce,
40—Rambo,
41—White Bellflower,
42—King,
43—Fallawater,
44—Wagner,
45—Herefordshire Permain,*
46—Swaar, (winter)
47—Bellmont,
48—R. I. Greening,
49—English Russet,
50—Dominie.*

No. 4. Amateur List of old and new varieties, some of which will be found among the best for general cultivation. Those followed by the * are in the descriptive list.

51—Early Joe,*
52—Early Strawberry,
53—Summer Rose,*
54—Coles Quince,*
55—Early Red,*
56—Porter,
57—Cranberry,*
58—Williams' favorite,
59—Pear Sweet,*
60—Primate,
61—Drap d'Or,*
62—Water,
63—Cooper,
64—Rosseau,
65—Sweet Gilliflower,
66—Fulton,
67—Saxton,
68—Hurlburt,
69—Utters,*
70—Rome Beauty,
71—Jersey Black,*
72—Smokehouse,
73—Harper's Sweet.
74—White Apple,
75—Jefferson,*
76—Chester Co. Redstreak,
77—Danvers W. Sweet,
78—Lady,
79—Campfield Sweet,
80—Ft. Miami,
81—Black Vandevere,*
82—Chronicle,*
83—Dumelows.*

No. 5. List of vigorous sorts, found adapted to sandy soils.—Nos. 2, 4, 5 6, 9, 10, 11, 22, 24, 27, 28, 45, 50, 64.

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FRUIT-GROWING IN WISCONSIN.—WHERE, HOW AND WHICH TO PLANT.

BY J. C. PLUMB.

First in the order of time and underlieing all prospect of future success, is the location of the orchard. We may produce a tree in the nursery, perfect in all its conditions, with a complete system of roots, low branched, of hardy, vigorous variety, yet that tree, if planted in a cold soil, filled with stagnant water, should it grow at all, will be late in starting, and produce a few feeble, watery shoots, which either kill the first winter, or drag out a few years of miserable existence. That tree will be pronounced "never good for nothing;" whereas if the same tree had been placed in a lively soil, of good depth, well drained and stirred, without undue stimulation, it would have made an early, vigorous growth, ripened well in autumn, wintered completely, and at maturity been pronounced "all right," an honor to the producer. *Location* has reference to *altitude*, *aspect* and *soil*. An altitude that reaches the thermal line, or even a sub-thermal, is a great desideratum in fruit-growing any where, and especially in this Mississippi valley of torrid noons and frigid nights, or, in other words, valley of extreme changes; and as the vine growers of the south are bringing out the fact that the most successful location for raising the grape, is on those mountain ranges above the thermal line, or line of early and late frosts. So we will find that location which will secure the most equal temperature throughout the whole year, the place for uniformly successful orcharding.

We have indicated the different effect which follows planting in a warm, well drained soil, supposing altitude and aspect to be the same, and would simply ask: How much easier to secure those favorable conditions on *elevations*, *hills*, *ridges*,

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bluffs, or *mountains*, where there is a natural drainage by porous limestone, slate, or gravel subsoil?

Our state is full of such locations, but they have been sadly neglected. The cultivator, thinking he should set his fruit trees under the shelter of the hill or grove, has had a harvest of disappointment, and given up in vexation, when almost every farm in the State has some natural elevation just suited to successful fruit growing. *Again*, ON ASPECT. How ardently and persistently most fruit-growers have advocated protection from cold winds as the great demand of the orchard, and carrying out this theory, chosen the south and east side of the hill as the only suitable place for the fruit tree. In fact, this idea has prevailed almost universally until, in the fertile valley of the West, annihilation seemed the destiny of our trees. But we are inclined to think the shock of 1856 will yet upset this theory, and we are happy to see fruit-growers awaking to this subject. Bearing on this point we offer the following propositions: 1st. That in all countries the greatest enemy of vegetable life is extremes of temperature and sudden transitions. 2d. That all valleys and sheltered sunny locations are subject to the greatest extremes, and in such places the transition is most rapid. 3d. The inside measure of these extremes will be ten degrees less in favor of the highlands, beside the transitions are far less rapid. 4th. That all our ordinary fruit trees will bear these extremes if the change is not too rapid.

Suppose we abate one-half of this estimate in the third proposition, to meet the ordinary elevations and ridges almost everywhere found convenient to the farm house; even this, taken in connection with the general circulation at the time of these extremes, would produce a very marked contrast in the condition of the fruit tree in the different localities. Let the fruit-grower ponder these facts and see the bearing they have on the "where to set an orchard."

The most objectionable situation for the orchard is the alluvial valley on the south or east side and near to the hills, because the soil is usually too rich in vegetable matter, and filled with stagnant water, producing a late, sappy growth. Such

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situation is also subject to late spring frosts, the extremes of heat and cold and to rapid transitions from one extreme to the other; which is most disastrous to tender trees, producing bark-bursting with its attending evils. The great humidity of the atmosphere is also favorable to the growth of fungi, or those dark mossy spots which characterise the fruit of alluvial valleys. The south or east side hill, though it is without most of the objections urged against the valley, yet is subject to one of the most serious effects, of the almost summer heat of the mid-day winter sun, without the equalizing influence of the north-western breeze, which always prevals in excessive cold weather; said effect being bark-bursting, the first of a long train of disasters. It is moreover, like all hill-sides, subject to washing by heavy rains. The *Summit of the Hill*, all things considered, is the place for the orchard; especially if it have a northern or western aspect, as such a location usually has a natural, or is favorable to an artificial, drainage, is not subject to washing; has a free circulation of air at all times, exemption from the late spring frosts, extremes of temperature, and sudden transitions of the valley. The dryness, equal temperature and general circulation of the atmosphere, are favorable to the moderate, healthy, hardy growth of the tree, and production of smooth, bright, high colored fruit, of fine texture, rich in quality, and keeping longer than that produced in the valleys. The *western* or *northern* slope has all the advantages of the crown of the hill excepting in their liability to wash, and to deep freezing when bare of snow, as was the case in the winter of 1855 and '56, in the southern half of the State; but these difficulties may be remedied by a proper system of plowing and mulching.

We have mentioned the subject of free circulation. It is one which has been lightly passed over generally, but demands more than a passing notice; for in the vegetable as well as in the animal world, stagnation is death! action is life! and these constant winds which people so much dread, are among our best friends; equalizing the temperature; driving away the humid air; rendering the trees hardy and self-sustaining, and

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though the fruit may not attain to that enormous size grown in the alluvial valley, we are fully compensated by its superior character and keeping qualities. Many suppose the less wind the more stable the tree; but truly the effect of a constant wind is to induce a self-sustaining condition of root and branch, and only the furious tornado or summer wind-storms are to be dreaded, which always sweep with most force through the valley and mountain gorge, doing more damage in the vale than on the hill. Had we the climate of humid England, where the extremes of temperature are not feared, and winter-killing is unknown, we might well choose the most sunny location for fruit; but as it is, by imitating the cultivators of Europe, we have had drawbacks as remarkable as our climate is different from theirs.

Bearing on this subject, we quote A. J. Downing in note to Lind. Theory Hort., p. 135, "The first impulse of the novice in gardening, is to place such half hardy plants in some sheltered spot, open to the genial rays of the sun in winter; a practice invariably followed by their destruction. Our sun, even in mid-winter, often shines with great brightness, and the thawing and distension of the tissue of tender plants which therefore follows, causes certain death. If, on the contrary, the species are placed in a cool shaded aspect, or what is preferable, if they are shaded from the sun by a loose covering of straw, mats, or even boards, and thus kept from thawing except in the most gradual manner, they will be found to have sustained no injury whatever. For the same reason orchards of peach trees in the Middle States on the cold north sides of hills, are often more vigorous and of greater longevity than those in a full southern aspect; the heat of our summers being sufficient to ripen their fruit and wood in such situations, while they are thus secure from the evils of great and sudden changes of temperature in winter."

How truly these principles apply in the case of the *sunny-side-of-the-hill orchard*, where there is this unequal expansion,) of the tissue, to be followed by as sudden contraction from cold, which results in disorganization and death.

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Did space permit, we would here introduce the proof of our position; but we can only say that the result of an impartial and careful examination of a large number of bearing orchards in different parts of the State, and in a great variety of soils, locations and aspects, fully establishes the fact, in our mind, that by far the larger portion of the healthy bearing orchards found in this State, are upon the bleak hill tops or cool aspects. Therefore, while we have an almost uniform succession of ridges and bluffs through the greater part of our noble State, it only remains for fruit-growers to demonstrate the complete adaptation of these elevations to the successful growing of the most valuable fruits.

In immediate connection with location, is the matter of THOROUGH DRAINAGE; which is absolutely necessary to success, and, in the way of preparation of the orchard grounds, is usually the first want, but the last to be supplied.

Subsoiling and under-draining after the most approved method, would undoubtedly be economy in the end; but as not within reach of every farmer who desires a good orchard, we propose the next best mode.

Let the ground be staked out as intended for the rows of apple or other trees, into lands twenty to thirty feet wide; strike out with the plow so that the middle or dead-furrow will come where the row is intended to be; plow as deep as possible, especially in the last few furrows, which can, by repetition, be plowed *beam deep;* then reverse the process, and by repeated plowings raise a ridge of any desired hight over the first dead furrow, giving one or two feet of loose soil to plant the tree on; the greater depth for heavy soils, especially if low.

We have seen this plan pursued on stiff clay land in Ohio, with the best of results. The finest vineyard of Isabella grapes we ever saw, was on gravel loam prepared in this manner.

If this ridging is performed before the trees are set, there is less danger of after-ridging, or banking the crown, to its injury, as is often done with trees set on the ground level. Small garden lots should be prepared by double spading or trenching.

FORM OF TREES has been and is still a matter of convenience

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and taste, but we earnestly invite all to begin right by selecting low trees, or make them low, by cutting off the tops when setting. The first consideration is its roots; bright, healthy, and enough of them; if the nurseryman is short of rooted trees, or parsimonious of them, turn your back upon him; have roots or nothing; be assured, that with a good foundation to start on, a self-bracing, self-shading, and we might say, self-cultivating tree, after nature's mould, of good variety, in such a location as we have shown to be desirable, we may have all earthly certainty of success, if we have learned

How to Plant.—Cole says, "A farmer dismissed a hand because he set only nine trees in a day during his absence; the next day he set the balance of the hundred himself. When they bore fruit, the nine set by the hand proved to be more valuable than the ninety-one set by himself." We have told hundreds of buyers, "Consider that mass of roots, how they were arranged in the earth; a place for every fibre, and every fibre in its place; let that be your rule in setting. Do not make a nest of these small roots; better cut them off, especially if the large roots are bright and healthy, or the trees much exposed in transportation. Cut off smoothly the bruised ends on the under side, straiten the crooked ones if possible, but handle them carefully; bear in mind, they are the foundation of a noble structure in the future."

If twisted in infancy, they will be gnarled in maturity; put in no strong or coarse manure, but a good surface mould or compost pressed firmly around each root; puddling is unnecessary, except in wet, stiff soil, and after all that the hands can do. If the ground has been prepared as we proposed, little or no holes will be required. We do not believe in digging holes to set trees in; would rather make the orchard ground *one vast hole* by subsoiling, and set the crown of the tree some three or four inches higher than it stood in the nursery; this is important; setting in a hole is deceptive, no allowance being made for settling. Ninety-nine per cent. of trees are set too deep, causing, indirectly, the death of half of them, by depriving the roots of free circulation, warm air and dews, causing

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extra roots and suckers to start from the crown; the former filling the trunk with surplus sap, robbing it of its due share.

Beware of Deep Planting.—Set high, using no stakes, but raise a flat topped or dishing mound around the tree; then mulch thoroughly with straw, coarse manure or other loose material, and throw a sprinkle of earth over it to prevent blowing away. If the tree will not stand then, cut off the top, and always shorten in the top—*not trim up*—proportionately as the root has been shortened in digging; this is all important. If the young growth of last year is left on, its numerous active buds will push out without much action of root; but when out must be fed or die; and the young spongioles not having got hold enough to supply the demand, exhaustion is liable to follow. It is easy enough to produce vigorous shoots if the root is vigorous, and one good strong, broad-leaved shoot, is worth a dozen old, yellow-leaved twigs to establish the tree. To remove large trees requires care and labor proportionate to their size, but it is seldom economy. We advise planting two to four year old trees; the larger the plantation, and the further transported, the smaller should be the trees.

Plant your orchard the first year with root crops; never sow grain in it unless the trees are broadly and heavily mulched—better to cultivate them annually and carefully early in the season, giving them a moderate top dressing of manure if the soil is lean. Never turn your trees out to grass, if you would be a successful fruit-grower.

Finally, with the true system in mind, do not fail to *plant;* and as *perseverance in the right direction will bring success*, your care and labor will be abundantly rewarded.

On this subject of after-cultivation we have room to say but little.

Which to Plant.—The third division of our subject, for the sake of economizing space, we present in connection with the new and valuable engravings of fruit furnished by the worthy Secretary of the State Agricultural Society.

With the descriptions, remarks, and general arrangement therein presented, we trust the reader will find a chapter of

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valuable information, especially for reference. Taken in connection with the Society's discussions and communications, on the same subject, as well as the valuable small fruits, we think the reader cannot go amiss on the subject of varieties.

APPLE CULTURE—WITH DESCRIPTIVE LIST.

BY W. M. BARTHOLOMEW, LODI, WIS.

I am satisfied that fruit-growing in Wisconsin will be a success, when the people can be persuaded to choose the proper localities, select trees from *nurseries in* the State, and use proper culture. My location is somewhat sheltered from the east, north and west winds (*don't think that any advantage*); land slopes to the south, east and north, but mostly to the south, a portion being level; the soil is a light clay with stiff clay subsoil, originally covered over with a growth of white, black and burr oak.

I have been experimenting eleven years in Wisconsin, with tolerably favorable results; to my own satisfaction, at least, I have settled several points—

1st. That the location must be high, rolling land, or thoroughly drained; not particular as to which way it slopes.

2d. The selection of trees *must be* from a *Wisconsin Nursery;* should be of such sorts as have proved to be hardy, of from two to four years from graft; *low heads are best.*

3d. In planting I have succeeded best by the following method: Dig a hole fifteen or eighteen inches deep, three feet across, fill the hole with surface soil within three inches of the top, cut off the ends of the larger roots, sloping the cut from the under side, spread the roots to their natural shape; fill in with loose dirt, pour in a pail of water and when soaked away, bank up the tree six inches, being careful to incline the tree to to the south-west; this will help to prevent injury from the sun in the early part of Spring. Mulch well and the work is done

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for the first season. Be careful not to set trees too *deep*, I think *that* is one reason of so much failure; setting in the manner I have suggested, the tree will settle with the earth filled in the hole. Calculation should be made that when all is settled to its natural place, *the tree shall not stand any deeper in the orchard than it did in the nursery.*

Watering the tree every few days, as is the practice of some, I deem to be injurious, as you lose the good results from having dry or rolling lands. If the tree is properly mulched, as it should be in all cases, it will not need watering unless the season is very dry. It is well to stake the trees one or two years, till the roots get a firm hold.

4th, *Culture.*—Have always planted my orchard to corn. Any hoed crop will do; I am satisfied, from observation, that to sow any of the small grains is injurious. I hoe about my trees every year, plow as near as I can without injury to the roots, wash in the spring with weak lye or strong suds. Think I have had good results from splitting the bark of the tree lengthwise —would prune in the month of June—have learned to use the knife sparingly.

Have successfully cultivated the following kinds:

EARLY VARIETIES.

Early Harvest—Early bearer; little tender.

Sweet June—Early bearer; very hardy.

Early Red—Hardy on dry lands; lost some on level land.

Early Chandler (from Ohio)—Early bearer; very hardy; fine spreading tree.

Fall Stripe—Early bearer; very hardy; 20 trees without a blemish.

FALL VARIETIES.

Utter's Large—Early bearer; very hardy; fruit large.

Rousseau—Early and profuse bearer; bears every year.

Fall Winesap—Bears well; a little tender; best fruit.

Late Strawberry—Very hardy; bears young.

Sweet Pear—Hardy; good bearer.

Belle Pippin—Very hardy.

Orange Sweet (from Ohio)—Hardy; large fruit.

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Blackburn's Superior Sweet—Profuse bearer; hardy.
Lane's Redstreak (from Curtis, Ill.)—Very hardy.

WINTER VARIETIES.

Perry Russet—Very hardy.
Limber Twig—Hardy; good bearer.
Willow Twig (from Ohio)—Hardy; fruit large.
Red Spitzenberg, or Canada Black—Good grower; hardy.
Northern Spy—Hardy on dry locations; 8 years no fruit.
Dominie—A little tender; good bearer.
Golden Pippin—Hardy; bears young.
Little Romanite—Hardy; good bearer; fruit poor.
Western Spy (from Ohio)—Very hardy; late bearer.
Rawles' Janet—Rather tender; good bearer.
Black Vandevere—Hardy; shy bearer.
English Russet—Hardy on dry land.
Belleflower—Very Hardy.
Hannah (from Curtis, Ill.)—Very hardy; good bearer.
Winesap—Very hardy; good bearer.
Winter Pearmain—Hardy.

I have quite a number of varieties not sufficiently tested to report upon.

The following have proved a failure with me:—Rhode Island Greening, Baldwin, Rambo, Pryor's Red, Vandevere, Holland Pippin, Newtown Pippin, Roxbury Russet, Fulton Beauty, Summer Rose, Sweet Bough, Barnhill Summer.

I have ridged the level portions of my orchard with the plow, and trees are now doing well.

ORCHARD TREATMENT, WITH LIST OF SORTS.

BY A. G. TUTTLE, BARABOO.

The following list of varieties of the apple have been tested here and proved hardy.

Summer and Fall—Red Astrachan, Duchess of Oldenburg, Sops of Wine, Drap d'Or, Autumn Pearmain, Keswick

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Codlin, Autumn Strawberry, St. Lawrence, Early Pennock, Early Joe, Fameuse.

Winter—Talman Sweet, Munson's Sweet, Baily Sweet, Detroit Red, English Golden Russet, Westfield-Seek-no-further, Pomme Grise, Dominie, Rawle's Janet, Winter Wine Sap, Northern Spy, Yellow Belleflower, Limber Twig, Willow Twig, Red Romanite, Black Apple.

The above varieties have all proved hardy on good soils and good locations.

For a soil and location unfavorable for fruit, I would recommend the following: Red Astrachan, Talman Sweet, Duchess of Oldenburg, English Golden Russet, Autumn Strawberry, Fameuse, Drap d'Or, Sops of Wine.

From a pretty thorough examination into the causes of failure, where hardy sorts of the apple have not succeeded, I am inclined to think that a very large proportion of the losses have been from the want of good thorough drainage. No one should think of planting an orchard where the water does not readily pass off from the surface, or when the ground is not well underdrained. Some sorts, such as the Dominie, Northern Spy, Keswick Codlin, Pomme Grise, and Rawle's Janet, will be destroyed from this cause, where many other sorts will thrive and do well. For this reason they should occupy the most elevated and best drained portion of the orchard.

I find that it is a very common practice to heap about the trees, in the fall, stable manure. I am satisfied that very many hardy trees have been killed in this way. A few shovels full of dirt, thrown about the trunk of the tree, will sufficiently protect the seedling stock, and if the trees need manuring, chip manure and leached ashes are not injurious, and much better for the purpose.

In setting trees, lean them well over to the south-west. In nearly all the orchards that I have seen in the State, the trees, by the prevailing south-west winds, are thrown over toward the north-east; consequently, the bodies are exposed, and receive the full power of the sun's rays in the hottest part of the day. Trees leaned well toward the south-west at

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the time of setting will have more nearly an upright position when grown than those set perpendicular at first, and the injurious effects of the sun upon the trees will be much less.

FRUIT-GROWING IN SAUK COUNTY, WITH LIST.

BY M. C. WAITE, BARABOO.

O. S. WILLEY, *Dear Sir:*—It is eleven years since I made the first attempt to grow apples. For the first few years it proved a failure, by attempting to grow such varieties as were favorites with me when residing near Rochester, N. Y. Having gained wisdom by experience, I have fallen back upon such varieties as appear to thrive and do well in our soil and climate, and have succeeded beyond my expectations. I give you the names of twenty-one varieties which have succeeded well thus far:

American Summer Pearman, Red Astrachan, Sweet June, Benoni, Early Joe, Sops of Wine, Keswick Codlen, Autumn Strawberry, Fameuse, Dutchess of Oldenburgh, Genesee Chief, Drap d'Or, Munson's Sweet, Lowell, Spanish Riennette, Yellow Bellflower, Golden Russet, Bailey Sweet, Talman's Sweet, Tompkin's King, Lady Apple, and six varieties of Crab Apples.

My grounds are thoroughly cultivated, deeply spaded and well manured, trees planted and the ground kept clean from weeds and grass. Once a year my trees are well mulched with leached ashes, lime and manure, well mixed, spread around the trees at the distance of four feet; not piled up in the shape of a cone around the body, as many are in the habit of doing in early spring. I give the bodies of all my trees a thorough washing with soap-suds, then white-wash, with a wash made with lime and salt, no glue or sizing being used; this helps to kill the insects and their eggs, not destroyed by the suds, and in my opinion smooths the bark, &c. My soil is quite sandy, with a clay sub-soil at the depth of two feet. Cherries have not succeeded. Plums do well; much the best

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when worked upon our wild stocks raised from the pit and cultivated in the same manner as our best fruit stock, then budded at the ground line the second year. The varieties which I have under cultivation and are doing well, are as follows:

Columbia, large blue; Imperial Gage, yellow; Washington, two varieties, yellow and purple; Madison, yellow; Coe's Golden Drop, yellow; Reine Claud d'Bavay, yellow; Roe's Autumn Gage, redish purple; Munroe, yellow; Bingham, yellow.

The history of my pear experience would not be very flattering. After having planted five to six hundred, watched and cared for them, visited them often, talked with them familiarly, and tried to encourage them in the belief that a "better time was coming," as soon as I left them for a few days they sickened and died, except a small remnant, the following:

Beurre Diel, Bartlett, Louisa Bonne de Jersey, Osband's Summer, Henry IV, Belle Lucrative.

Nevertheless I am not yet discouraged; but shall continue to plant and care for them as usual. The small fruits, such as Currants, Gooseberries, Strawberries, Blackberries and Rhubarb, I have no trouble in getting a full crop every season. A few of the varieties which I think are best for cultivation, or have proved so with me, are Wilson's Albany Strawberry, Brinkles' Orange Raspberry, Lawton Blackberry, White Smith, Crown Bob and Houghton Seedling Gooseberries; Victoria and Lineas' Rhubarb; "Cahoon's" is a humbug, in my opinion, as also the Strawberry; this is no hasty opinion, as I have had all the plants named under cultivation.

As to dwarf trees they are of but little account, if planters will but purchase standards, with *very low heads.* A few dwarf trees planted in our village gardens are very ornamental, and may with propriety be planted, if profit is not taken into account. I am testing a new stock for dwarf apples; if it proves satisfactory, it will afford a theme for a short dissertation for a future volume.

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PEARS IN JEFFERSON COUNTY.

BY JAMES BARR.

The following list embraces most of the varieties I have in cultivation, of which I fruited upwards of twenty varieties the past season; all choice except one unknown variety. I grew from one to one hundred specimens on each tree. From my experience I would recommend to be grown on pear stocks the White Doyenne, Flemish Beauty, Early Bergamott, Beurre, Goubault, Swan's Orange, Belle Lucrative, Oswego Beurre, Buffam and Stevens' Genesee. For dwarfs I would recommend the White Doyenne, Beurre Goubault, Buffam, Belle Lucrative, Oswego Beurre, Louise Bonne de Jersey, Seckel, Easter Beurre, Viscomte d'Spoelberch, Doyenne d'Ete, Vicar of Winkfield, Tyson, Bloodgood, Beurre Lanlier.

The Glout Morceau and Duchess d'Angouleme are hardy and good growers, but have proved shy bearers; perhaps they will improve in bearing when the trees become older. My trees were set in the Spring of 1855.

I prefer standards to dwarfs, and I think by planting on high situations, with perfect natural or artificial drainage, and heading the trees low, not more than two feet high, we can succeed in raising pears in Wisconsin nearly or quite as often as we can apples. I prefer a *western or north-western* slope to any other. The dwarfs require more care than most people are willing to give; they must receive clean culture, and the roots well mulched in the fall, to protect them through the winter; they should be planted deep enough for the union of the pear and quince to be from six to eight inches below the surface. I have some eight inches deep, that do well.

My location is on top of a ridge, about sixty feet above and about sixty rods from Rock river; the soil is sandy clay, with a stiff clay subsoil interspersed with sand and lime pebbles, resting on loose gravel, at a depth of from three to five feet.

I prefer standard trees, viz: those worked on pear stocks, branched low, to those dwarfed by working on the quince; but I can give the right hand of fellowship to dwarf apples.

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Consider them just the thing for gardens, where an assortment is wished for the season; bearing early. Grew several bushels the past season. The trees are low in form, and many tender varieties could be grown in this way, on account of the facilities for protection, which would be lost if planted in the ordinary mode of standards.

FRUITS IN NORTHERN IOWA.

BY D. W. ADAMS, WAUKON, IOWA.

Alas for human weakness and expectations! Twelve months from the day of my first efforts in orchard planting; not one tree in twenty contained a spark of life. Exposure in transportation, imperfect planting, drouth, and winter frosts and winds completed the work commenced by the murderous knife and spade in the nursery; and the poor, little, abused, murdered trees spread out their leafless, barkless branches, in silent, yet eloquent appeals to ignorant man for mercy.

Not baffled by difficulties, the following season I was encouraged to "try again," as here and there I discovered a tree which grew luxuriantly, and bore abundantly, the finest fruit; this led me to believe that *ignorance* had as much to do with our failures as unsuitableness of *soil* and *climate;* and a careful examination revealed the fact that the Spitzenburghs, Greenings and Rambos, were not to be relied upon, while the Tallman's Sweeting, St. Lawrence, Golden Russet and Seek-no-further were always found to be in a good condition. Here was a beginning of tried friends, which, after a lapse of several years, I have been enabled to extend to the following sorts:

For Summer.—Yellow Harvest, Red Astrachan, Early Joe, Sops of Wine.

Fall.—St. Lawrence, Duchess of Oldenburgh, Strawberry, Augustine Sweet, Superb Sweet.

Winter.—Golden Russet, Fameuse, Jonathan, Seek-no-further, Dutch Mignonne, Bailey Sweet, Rawles' Janet, Tallman

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Sweet, Winesap, Lady, Winter Swaar, Herefordshire Pearmain, Yellow Bellflower, Malcarle.

My list is short, but I have tried them severely. The above are all that I can recommend from an orchard containing upwards of 100 varieties. With the exception of an early sweet apple, they contain an assortment of apples that should satisfy any reasonable man—keeping through the whole year, early and late, sweet and sour, large and small, and all *good enough.*

With pears I have had less experience, yet I have found, as far as tried, the following varieties hardy in the following order: Flemish Beauty, Belle Lucrative, Beurre d'Anjou, Winter Nellis, White Doyenne.

Plums—I work altogether on the wild stock, and find Green Gage, Smith's Orleans, Coes' Golden Drop, Adams, Bradshaw, Purple Egg, and some others hardy and thrifty.

Cherries on Mahaleb stocks of Dukes and Morello classes, prove hardy.

Trees of every variety must be formed with low tops for the prairies—not of so great consequence in the timber—and in our light, friable soil, *always mulched* when planted.

FRUIT CULTURE IN MINNESOTA.

BY L. M. FORD, ST. PAUL.

After an experience of some ten years in the growing of fruit and fruit trees, I have come to the conclusion, that for general purposes, our common varieties of apples, pears, plums, and cherries, are not adapted to the soil and climate of Minnesota. We are forced to this conclusion, however unpleasant it may be on our part; but we are constrained, from the force of circumstances, to make the statement which we believe to be correct. Nor do we believe that this rule applies to our State alone; one-half of Wisconsin, the western portion of

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Iowa, all the vast country west and north-west of us, including a scope of territory large enough for a score of States, within our own limits, and British America, must have some *hardier varieties* of the fruits named above.

In time, this large and fertile tract of country is sure to be densely populated, from the fact that its soil is rich, and the climate healthy, to say nothing of the mineral wealth of the Lake Superior region.

The subject, therefore, of fruit culture, as will be readily inferred, is one of the greatest importance, not to us only, but also to the many millions soon to inherit this vast empire of the American Continent.

Indeed there is nothing of importance wanting in this great central tract of North America, except the fruits of those regions nearer the oceans or great lakes. They are a great luxury, and not easily dispensed with; nor do we think they will be, for we are strong in the faith that varieties of fruits will be originated, well suited to this singular climate; or, at least, improvements made on the native kinds. The wild plum of this region is already a very good substitute for the more uncertain cultivated sorts of the East. And we do not see why the Siberian Crab may not be vastly improved in the course of time by raising from seed, or by a system of hybridizing. Something, perhaps, may be done with the common wild crab.

In this State the small fruits flourish remarkably well, including Currants, Gooseberries, Strawberries and Raspberries. The Grape matures finely on our warm soils, and we have no doubt that our Upper Mississippi bluffs will be more renowned at some day for the production of wine than the Ohio of the present time. As far as we have had experience in grape culture, the vines in our climate are less subject to mildew and other diseases, than they are farther south. They ripen much better than they do in Wisconsin and farther east. It is seldom that the Catawba fails to ripen here, unless planted on a very poor soil. All vines, however, should be covered in the fall, which is also needed much farther south, to ensure healthy vines and a certain crop.

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Peaches have been fruited to a limited extent about St. Paul, by training near the ground, and covering during the winter. It is thought by those who have tried this experiment that they may be grown in this way largely, and with profit. Pears have been cultivated somewhat in the same way, and have borne well when covered properly.

On our heavy clay soils, we hear of some orchards coming into bearing, and no doubt many parts of the country will produce apples of the more hardy kinds. In the moister regions of Lake Superior, where the snow covers the earth to a great depth the entire winter, fruit as far as it has been planted has done well, and no doubt, in time, much of the fruit consumed in the interior and west of the lake, will be grown in that country, which seems to resemble Canada, on the Saint Lawrence. Orchard houses will probably be very common with the wealthy of the great North-west.

In regard to varieties here, we would state that all have suffered, at one time or another, since the winter of 1855 and '56. Those best suited to eastern Wisconsin we find to do here on the heaviest soils, but how well, still remains to be tested by time.

Our hope, as intimated above is in the production of hardier varieties, either from seed or from hybridizing with the Siberian Crab, for all soils and locations.

GRAPES IN COLD VINERIES.

BY J. C. URE, GRAPETON GARDENS, NEAR CHICAGO.

The Border.—In making a *vine border*, I first set posts, of some durable wood, for the foundation of the grapery, allowing them to come two feet above the surface. I then cart in good surface soil, (I have a sandy soil) sufficient to form the border, both inside and outside, allowing its depth to be two feet; *all above the original surface.* This elevation gives partial drainage.

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I put the richest soil near the surface; the roots seek it, or are content to feed in it, and are more directly under the control of the gardener. If the old method of trenching the ground, burning carcasses or other putrid matter, &c., be adopted, the roots go down, away from the sun and air in search of food; and when it is desired to check the growth in the fall, by withholding water or moisture, and lowering the temperature, in order to ripen the wood before winter, it is found more difficult to do; the roots are not so sensitive to exterior influences. The importance of a well ripened cane cannot be over-rated. If ripe, a cane will withstand a great amount of freezing, and unless it is well ripened, we need not look for much success in vine culture.

As the border decomposes and settles, a top dressing of compost may be given. It may be made of ten wagon loads of prairie sod, cut four inches deep, put in a heap, mixed and cut fine to be kept moderately dry, and worked with three or four bushels shell lime, slacked with from one-half to one bushel of coarse salt dissolved in water, or about the same proportion of pickle. The salt kills grubs or insects in the compost. To the above add six to eight bushels of unleached ashes, or twelve to sixteen bushels of leached, all the soap suds from the house. Do not turn or work the compost when wet. If you do, it becomes like clay worked for brick. To the whole add two or three loads of barn-yard manure.

I have hitherto recommended the use of salt, lime and ashes, applied to the surface of the border without being mixed in compost. I have used them thus. But it is better that the inexperienced mix it with the compost. If oyster shells or bones can be got easily, and crushed or broken, a few barrels may be added with advantage for a permanent border compost.

The Border Outside.—Vine borders should be made to extend outside the house. I make it five or six feet wide outside, when it is practicable to do so, and extend it annually, until it is twelve or fifteen feet wide, sloping from the wall of the vinery down to the surface of the adjoining ground. The roots

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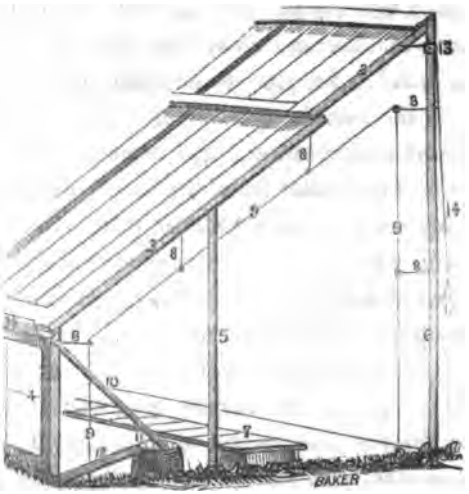
of the vines find their way outside the vinery under the cells, and luxuriate in the outside border.

If then there is three or four inches of compost scattered over the surface, although the border be poor, the strength will be given the soil in the form of liquid, washed from it by the water applied.



The Vinery.—The above drawing represents the plan of a small vinery, made by myself in 1857, which will serve to give the reader an idea of the best and cheapest mode of constructing such a building.

The following is the description of the drawing A, by which the amateur and his carpenter may make one very cheap: 1, cap board for the upper sash to slide under. 2, upper sash with four small rollers, to facilitate sliding, and one small flat iron bar across and under the center, sunk into the sash, flush with the surface, to strengthen it. 3, lower sash, eleven feet long, three feet six inches wide; the upper sash slides over it. 4, front sash in two divisions — the upper one stationary, the lower hung with hinges to afford ventilation at certain seasons. 5, post or stud, from the ground to the rafters, from one inch to two and a-half inches square, on which to train the center row of vines, as seen in the drawing B. 6, post or stud four by four and a-half inches, on which to rest the back or wall.

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plate. 7, elevated walk down the center, made with two scantlings and narrow pieces of boards. 8, iron rods, one foot long, to support the wire that supports the vine—may be purchased ready made, with eye on one end and screw on the other, ready to screw into the rafter, for eight cents each. 9, wire passing through the eyes of the rods (8), on which to train the vines; this keeps the vines one foot from the glass and wall; wire is cheaper, obstructs less light and is more durable than wood. 10, pipe to conduct the water from the eave-trough to the barrel. 11, barrel to hold water, which is kept of the same temperature as the atmosphere. 12, pipe to carry off the surplus water from the barrel outside under the sill. 13, pulley screwed into the back post, over which passes a cord (14) with which to work the upper sash, for purposes of ventilation, &c., and fastened to a hook (15) still lower in the post. 16, trough, of zinc, tin or wood.

The size of the short front stud is two by six inches. The rafters should be two by six inches, with ways nailed or mortised to them, for the sash to rest or slide on. The wall plate is two by six inches, with the inside edge bevelled to one inch, so that no water may rest on it.

The sill may rest upon posts, brick or stone, leaving room for the roots to find their way outside under the sill. The above is drawn to a scale of three feet to the half-inch.

Such a vinery may be built as a "lean-to" against another building, and at small cost comparatively—say $5 the running foot. It is not the most costly house that is the most profitable, but the one best adapted to our climate.

Planting.—Vines one year old from the eye are the best. Cut back to two eyes, and plant them before, or as soon as the first of April. Shake the earth from the roots or balls formed by growing in pots, straighten the roots in all directions, and cover lightly with the same soil that is used in the border; putting strong manure on them will injure them and cause canker in the injured parts. Rich compost may be spread over the soil.

If the vines have been grown in pots, are started, and it

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is late in the season, it is best to disturb the roots as little as possible.

The vines being planted in hills, or crowning, the border decomposes and settles, and the application of compost is necessary to keep the surface level. It is best to plant thickly—one vine under each rafter, and as many rows as the width of the house will admit, planting the first row one foot from the front stud, and the back row the same distance from the back stud. They may be planted four feet apart, and as the house gets age and the roots grow, they may be thinned. It will be necessary to do this because the laterals and roots will extend to the injury of each other. It is a bad plan to have any forest trees growing near a vinery, as their roots will get into the border and rob the vine.

Management.—When the vines are planted, avoid exposing them to dry winds. The temperature may be allowed to rise as high as 75°; syringe them two or three times per day in dry bright days; but withhold the water in cloudy weather. A warm moist atmosphere will cause the eyes to burst better, and a *good start* is an important item in vine management.

They may be started from the first to the fifteenth of April, according to the season. But it is best to keep them cool and as backward as possible on account of late frosts. But if the vines in a house have not started, they may be saved by putting a barrel or tub in the house, and, if frost is expected, fill it with boiling water in the evening and again in the morning, and by syringing the house—all the vacant spaces—with hot water before the sun gets up. But no water should touch the vine. This precaution may not be needed, but I have saved a crop in this manner when most others lost theirs. A slight frost will not kill the vines; it only injures the most advanced of the fruit spurs.

It will be more trouble to regulate the temperature of the vinery the first year, than thereafter; because as the vines grow they shade the inside of the house and protect it from the effect of sudden changes.

Give air gradually, and mostly from the top. If the tem-

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perature should get higher than is wished—say to 100°, giving air suddenly to lower the temperature, will scorch the vines near the top, and in the draft. But if the syringe is used on the wood-work, passage ways and border first, it will cause a moist atmosphere, and create a vapor which will modify the action of the sun; then open the top ventilators gradually, and the temperature will fall without injury to the vines.

If the red spider should make its appearance, it may be eradicated by a moist atmosphere, caused by syringing.

By the middle of August make the atmosphere a little dryer; withhold water at first gradually, but by the last of September almost entirely,—just enough being given to keep the roots from shrivelling. This will make the wood ripen up and become solid. As the color of the wood becomes brown, the bottom ventilators may be opened a little at first, and then more every fine day until severe weather.

Some are afraid to give enough of heat or moisture in the management of vines during the growing season, although it is very essential.

It is better to have a straight cane than a great many lateral shoots. The growth of these laterals should be stopped at the fourth or fifth joint or leaf, by pinching. They will again start; and should again be pinched off, leaving one leaf after the preceding pinching. This pinching-in process should be continued in the manner described as long as these laterals continue to start. This throws all the strength and vigor of the vine into the main cane, where it is wanted, and keeps the laterals from intermingling and interfering with each other.

Pruning.—The vines should be pruned as soon as the leaves fall, so that they may heal.

Washing the Vines.—This should be done in the fall, so as to kill all larvæ or eggs of insects. Wash with half a gallon of soap suds, half a pound of tobacco, one pound of sulphur, half pound of sal-soda; stir together and boil. As soon as it has come to a boil, take it off and let it cool. When cool, apply to the canes with a brush. Then the canes may be laid down, bent carefully, but not covered until severe weather

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comes; then with covered leaves or litter—the latter is best—or wound with straw, and then covered with dry litter. Some cover by digging in and laying in the border; but this sometimes destroys the roots.

Put a handful of air-slaked lime in a circle about the base of the cane, when field mice are troublesome.

Rats sometimes girdle the vine in the winter, in the litter. I am poisoning them by using a vermin killer which I obtained at the drug stores. It destroys mice also.

Management the Second Year.—As soon as the first of April of the second year, the vines must be looked over. Care should be taken that the vines do not grow—that the house does not get too warm. It must be kept cool, and the vines kept back as long as possible, The coarse manure or litter should be taken out between the first and fifteenth of April. The vines should be slung up loosely—not tied up in their permanent position—but suspended *low* by tying up the middle of the vine. It is important the buds at the root or base of the vine should burst first, and if they are growing in the form of an arch, and yet kept as far from the glass as possible, and off the ground, the desired result will be secured.

After the buds have grown two or three inches, rub off a few of the weakest buds. The remaining buds will, or should, blossom two or three leaves from the main cane. These spurs are allowed to make four or five leaves, then pinched in as directed in the first year's management.

When the branches begin to show, after they have set, leave only one and the best on each spur. Thin that one, taking off about one-fifth of the berries with a pair of scissors, selecting the poorer ones, and distributing the thinning so as to preserve the symmetry of the bunch.

If it is desired to cut out any vine on account of thick planting, it may be allowed to fruit much heavier than as above directed, exhausting its energies in producing a crop the second year. But the above directions apply to permanent vines. Care should taken not to allow a vine to fruit as heavily as above described,

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unless it has an abundance of well-ripened wood the preceding year.

The general management may be the same as the first year, until we come to pruning again. Then the side shoots should be taken off in the fall pruning, leaving two eyes; for the first eye is seldom well developed. Three or four feet of the new growth is left on the main cane.

The general management the third year is similar to that given for the second, varying only in respect to the amount of fruit grown.

Varieties.—The varieties I have growing, are well adapted to this latitude. Some of them are known by several names. I would plant in the following proportion:

6 Black Hamburgh.
2 Wilmot's Black Hamburgh.
1 Black Cluster—one of the earliest.
6 Black Zinfindale, bunches long with two shoulders.
4 Black Prince.
2 Black Frontignac.
1 Rose Chasselas.
1 Reine de Nice.
2 Golden Chasselas.
1 Tokay.
2 White Canon Hall Muscat.
2 White Muscat of Alexandria.
1 White Plantation Cluster.
2 White Nice.
2 White Frontignac.
1 White Tokay.
2 Chasselas Musque.
4 Royal Muscadine.

The Muscats should be planted in the warmest part of the vinery.

Mildew.—Sulphur will check or stop mildew by sprinkling it on the leaves after syringing, and raising the temperature a few degrees. Keep the house closer and dryer for a few days; but be careful that the sulphur does not get ignited, or it will kill vines and all. But if exposed to the rays of the sun it will send off fumes that will destroy the mildew; but will not hurt the vines, or the leaves even, although the sulphur may lie upon the top of the leaves, and exposed to the sun.

Spread a pound of sulphur (in a house of the dimensions herewith given,) upon pieces of boards, or in shallow pans, in different parts of the vinery, and let it remain exposed to the sun from the first of June to the first or middle of August.

Liquid Manure is easily applied. If the soil is deficient in

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any of the properties necessary to the healthful growth of the vine and developement of the fruit, it is not necessary to disturb the roots in order to furnish them with the food. Liquid manure may be used, and it is scmetimes easily and cheaply obtained—such as soap-suds, barn-yard drippings, &c. Or one peck of wood ashes may be mixed with 100 lbs. of cow manure and water applied. The ashes assist the decomposition and hasten the time when it is in condition to apply to the vine. If the ashes or salt and lime are added to the liquid droppings of the barn-yard, it is an advantage.

EVERGREENS FROM SEED.

BY J. S. STICKNEY, WAUWATOSA, WIS.

A negro being asked how many rats he had caught, replied, "When I have caught the one I am after, and two more, I shall have three."

This mode of "reckoning" is very applicable to my successful experiments with evergreen seed; and were it not that the "two more" are just in sight, and I have *great hopes of catching them*, it would hardly pay to write of my failures.

My first experiment was with seed of the White Pine, gathered at Sheboygan, and sown in Autumn, directly from the cones. It came finely and grew well through the season, being carefully shaded during all the hot, dry weather, with cotton cloth. I wintered the young plants safely by covering with leaves. The spring following I transplanted them to the north side of a board fence, and concluded they would do without more shading, but a single week of scorching sunshine used them all up.

I have been "equally successful" with White Cedar, Red Cedar, Hemlock, Balsam, Norway Spruce, Scotch Fir and Austrian Pine. Most of the seeds sown have vegetated readily, especially Norway Spruce, even at four or five years old. In

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all cases (save one) I have carefully shaded; using various materials, such as glass, boards, cloth, lath, brush, &c. Sowing in close frames and covering with glass, I think would be successful, if the necessary care were given; but that would be too troublesome. In changeable summer weather the frames would require attention every hour or two, and one day's neglect would ruin a whole season's work. Cloth is objectionable, as a shade, because it sags in the centre, and in case of a shower the water drips on the seed bed from a few points, beating down the soil, and making it too wet in places, while some parts are too dry. The same objection will apply to boards; and they also obstruct the light too much. The cost is another item against the use of these materials. Lath make a very good and convenient shade, and when neatness of appearance is desirable, should be used in preference to anything else; but when looks are of less account, brush is equal to anything I have used; White Oak, which retains its leaves when dry, being preferred. It excludes the sun sufficiently, admits a free circulation of air, distributes the rain evenly on the seed bed, and is *cheap*.

Last spring I made my seed beds ten feet wide, drove a row of small stakes along each side, and in the centre; to these stakes nailed six inch fence boards, which made a support for the brush and raised it sufficiently from the beds. Sowed the seed and raked it in lightly, then sifted on one-half inch of finely pulverized muck, to retain moisture and keep the soil from packing, and covered with brush. Sowed four pounds of seed, and started probably 100,000 plants, which have diminished to, perhaps, 5000. A sorry failure, you will say, but I propose to try the same amount another spring, and in much the same way. I shall thoroughly pulverize the soil a little deeper, say eighteen inches, nail my boards to the stakes close to the ground, instead of raising them four inches, as last year. I shall sow as early as possible and be careful to have the muck which is sifted on the surface free from weed seed, which was not the case last year; and then, when all is complete, I shall recommend to myself an extra amount of care and atten-

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tion through the season. All these things being faithfully carried out, I think the "two more" will surely be mine. Evergreen seedlings should always remain two years in the seed bed, and I have found a good covering of leaves to be the best winter protection. Oak leaves are preferable, because they do not decay easily, and lie light and loose for a long time.

People study mathematics as discipline for the mind; if any friend needs discipline for the *patience*, we would heartily recommend him to grow evergreens from seed. Our "try again" bump is increasing under the treatment from year to year.

It seems almost a waste of time to grow our native evergreens from seed when they are so readily procured from our northern forests. My usual treatment of forest evergreens is to "bed them in" quite thick in rather moist black soil, where they remain two years, then transplant to nursery rows, in any well prepared soil, mulching them deeply, and treating the root as carefully as possible. The best material for mulching is saw dust or chip dirt. The best manure I can give them is thoroughly decomposed swamp muck. Moving the trees every other spring is the surest way to give good roots. *Thoroughly pulverized deep soil*, is as necessary for them as for other plants.

EVERGREENS FROM SEED.

BY O. S. WILLEY, VINE HILL NURSERIES, MADISON, WIS.

To be successful with these embryo trees requires patient toil, constant watching, and no small allowance of knowledge pertaining to vegetable physiology; "close and constant attention" must be the motto; nor will it end with a day or week's labor, but must be kept up through months in the seed bed, and years in the nursery row, ere the plant or young tree is prepared for the garden or lawn. To be successful with evergreens from seed, several items must be observed, viz: a suitable frame,

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compost, or soil properly composed, that the seed will germinate without trouble, a proper shade, and last, though not least, the how to use the article, as well as the how not to.

Prepare a rough frame, precisely as you would for a hot-bed; though not so high above ground. It should not be more than eight inches in front, and one foot two inches in the back, four and one-half feet wide, and the desired length to accommodate the amount of seed. Place this in a position to face east or south-east, and if the sun will not shine on it after mid-day all the better; so that you may avoid the strongest of the sun's rays. After placing it in the nearest desired positions possible, dig out eighteen inches of the soil, throwing it upon either side, with the most upon the back, that it may be used in banking up to the frames when all is completed. In the bottom of the "pit" place quarry rubbish, or stone broken small for the purpose, to the depth of four to six inches, that the drainage may be complete. Upon this drainage take sods and place them in an inverted position to keep the drainage more perfect, by keeping the loose soil from working through it, and preventing lessening its full benefit.

The soil must now be prepared, or if it had been done the fall previous, and now reworked, all the better. Black vegetable-produced soil as a base is the best. This can usually be found in the low timber land, or bordering upon streams. To this add one-fifth sand, and a sprinkling of thoroughly rotted manure; not such as would be applied to wheat or corn field, after a slight composting of once turning, but a little from the compost mass of three or four years' turning, and which will become part and parcel of the earth itself in appearance when once well turned together. In the absence of the vegetable loam, any good garden soil may be used, and will answer a good purpose. To this, in addition, add one-fifth part well rotted chip manure from the wood pile. These must all be broken finely, and thoroughly mixed together; no lumps or other coarse materials should be allowed to remain. The pit may now be filled with the compost at hand to within six inches in front, and twelve at the back of the top of the frame. Spat

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it firmly with the back of the spade when filled, to give it a complete form; rake the surface slightly with an iron-tooth rake, that it may be light and loose. If the compost is in the least degree dry (which is not apt to be the case in the early spring), give it now a thorough watering with the watering pot; then wait a day or two until the surface is sufficiently dried to work free and light when the seed may be sown. If the soil is sufficiently moist, sow at once; which should be done as early in the spring as the ground can be worked without injury from clogging. The plants will then start and make the most of their growth before the warm and dryest weather. In this latitude sow from tenth to twentieth of April, varying with seasons. Scatter the seed thickly and evenly over the surface, (if all grow many will die); cover them with some of the same material of which the bed is made, containing one-third sand instead of one-fifth, and sift it through a fine sand sieve evenly upon them; for Norway Spruce to the depth of one-third of an inch. Too much pains cannot be taken in mixing the compost with materials perfectly free from foul seeds. *They* will be sure to grow, and the trouble of weeding, beside the loss and damage in displacing the young plants while weeding, will be great. Cover the surface with moss if it can be had, otherwise cut straw a half inch long, and spread evenly over it to the depth of half an inch or so; this will be a two-fold benefit, by keeping the seeds and young plants from drying, and preventing the surface from baking by constant watering from the pot if the weather is dry and requires it; the mulch need not be removed; it will be found equally as beneficial in the latter as early part of the season.

Immediately after the seed is sown a shade should be provided; not only from the hot sun, but to keep off the dry, driving winds, which will tend to absorb more moisture than the heat of the sun. Evergreens like a moist atmosphere; which by no means implies a water-soaked one; and it is for the purpose of keeping up a moist equable atmosphere, that the shade is used, viz: to prevent too great an evaporation. In this respect we must imitate nature as far as possible; she grows them in the

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shade of large trees and dense forests, where the atmosphere is continually moist, and *no dry currents of air passing over them.* For this purpose, and at the same time making cheapness the rule, there is nothing better than cheap factory cloth, purchased one yard wide; the frame being one and a half yards wide, it is easily used. Make a frame from strips of board, two inches wide and twelve feet long; nail a piece across each end, with one in the middle, using wrought nails, and clinching firmly. Let the width be the same as that of the seed bed; upon this tack the cloth, first sewing it together the correct width to cover the frame; draw it tight as possible, as it will naturally stretch with time; now with hinges attached (leather ends will answer) to the back of the frame, your bed is well prepared, and your seeds in a fair way to vegetate. On keeping up the moist, humid atmosphere the success of the growth of the evergreens will greatly depend. It will usually be found necessary to give them watering once or twice a week. This is easily regulated by the surface appearance of the soil; and much will also depend upon the necessity and frequency of the application, in preparing the compost to withstand the drouth.

During the entire season the covering may be removed entirely at evening; thus giving the young plants the benefit of dews, &c., to be again covered before the sun strikes them in the morning. If the heat is too great the cloth may be white-washed, which will remain good for six or eight weeks, when it is easily coated again. Winter by keeping dry, sprinkling them over with leaves from the forest to protect them from cold, and also from heaving out by frost.

PURPLE CANE RASPBERRY.

BY C. H. ROSENTIEL, FREEPORT, ILLINOIS.

O. S. WILLEY.—In answer to yours of a late date, containing inquiries about this fruit, I can only speak so far as my experience goes, in testing it. I think more of it than any other

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small fruit growing, of its class, having fruited them by the side of eight different sorts, and am well satisfied of its qualities and hardiness. With me they require *no protection* in winter, and thus far bear full crops each year, except in 1859, when the "June frost" damaged it, so that I had but half a crop. The flavor I never saw excelled for table use, jelly or preserves,—have also manufactured some wine from the fruit, which has no equal, readily commanding one dollar more per gallon than other sorts.

The preparation of land for a raspberry plantation is simple and easy. One thorough plowing in the fall, and if the soil is clay, enrich with well-rotted cow or chip manure. Set young plants in spring, four feet each way, tending well with horse cultivator, or hoe to keep clean. The following spring with willows tie to stakes driven to each plant, and cut the tops off, so that the plants will not be more than four feet high, when the fruit spurs shoot out, and the fruit is easily gathered while standing. Cut out the old wood the following spring, tie new growth to stake and proceed as before. The preparation and care is so very simple, my only wonder is that every family in the country is not well supplied with the fruit. It is certainly no humbug, such as we sometimes have imposed upon us by itinerant tree pedlars.

CULTURE OF THE STRAWBERRY.

BY GEO. J. KELLOGG, JANESVILLE.

Each variety succeeds best in certain localities, hence the caution necessary in making selections. Were we to follow the nameless and often senseless lists of some *Eastern* cultivators, when would the end be, and where our most delicious and healthy of small fruits. With a moderate degree of common sense, very few need want for fine strawberries.

In the selection of varieties, there should be more confidence placed in the experience of local cultivators, *or* there should be more cultivators in every locality *worthy* of confidence.

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With the present mania, we are liable to be imposed upon by eastern humbugs, and by some of the *bugs* themselves.

There are doubtless many new varieties worthy of thorough trial—but like the Wilson Albany—there may be productiveness, size and hardiness, but deficiency in *quality*. We should not yet discard the old standard sorts, at least not till we can surpass such as the Large Early Scarlet, Willey, Hovey's Seedling, &c. I know of no better variety than the Willey for general cultivation. And while it is well to pay some attention to Staminates and Pistillates, yet the Willey, pure and free from other sorts, has produced fruit in abundance, forty rods from any staminate or hermaphrodite variety.

Doubtless the best soil for the strawberry may be found with a clayish, gravelly subsoil, with much of the *sand* in the surface loam.

Preparation by *deep* trenching, working in leached ashes, leaf and peat mould will always pay. The plants may be set two feet by two, or one foot by four, cultivated in hills, rows or alternate strips, with about equal profit for labor bestowed.

It becomes necessary to renew the plants the second or third year, or fail, yet there have been instances where beds have been kept in good order, and yielded large fruit by annual mulching of *clean* straw to depth of four to six inches, leaving the same on in the spring. But *lazy* cultivators will usually be known by their fruit, if indeed they have any. Light mulching of *clean* straw must not be omitted in the fall, or death to new beds and less fertility to older ones will follow.

Happy the man who can irrigate his strawberry beds at pleasure. Water must be had regularly during the fruiting season. With water at command, the *high gravelly* knolls of Rock County will, with but little fertilization, produce *fine* crops, and very early.

Again we say to the inexperienced, go to your best cultivaters *nearest* home, and procure such kinds as they *know* will succeed.

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THREE RADICAL QUESTIONS IN FRUIT GROWING.

BY F. K. PHŒNIX, BLOOMINGTON, ILL.

1. What is the hardiest apple tree with you, of summer varieties, fall, winter or seedling, thoroughly proved and found fruitful, and the fruit useable?

2. Which is the most certain bearer of each season—summer, fall, winter—more especially in unfavorable seasons, when late frosts cut off the fruit crops?

The writer well remembers hearing, from venerable grandparents, about certain trees of a Russet, or Seedling, or something else in the "Old Orchard way down East," which bore in several frosty seasons that destroyed all other apple-sets in the orchard. Others can probably recall similar experiences and reports. In our own orchard here, set three years in spring of 1860, and many trees well furnished with bloom, nearly all were killed by severe late frosts, except the Winesap of which there were many trees, most of which had apples on; and so it was in several other orchards about. The Jonathan also bore a few apples.

Other varieties, like the Janet and Northern Spy, have a very useful habit of late blooming, and so escape. Others, as is said of Rome Beauty and Vandevere Pippin, will throw out new, though feebler bloom, if the first set is destroyed by frost.

3. Among reasonably hardy sorts, which are the earliest bearers of each season? A decided object, we think, on new places.

The writer well recollects hearing, some years since, Mr. A. R. Whitney, of Lee Co., Ill., say that from two trees of Yellow Ingestrie he had sold fruit to the value of sixty dollars almost before many of these standing around, of other sorts and much larger trees, had commenced bearing.

No matter if the fruit be but few removes from a crab apple, if a variety were hardy or reliably fruitful in bad seasons, and a very early and good bearer, it would be worth cultivating.

Are not these important points for the million who would plant fruit trees on new places, or in severe climates? And so

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with all fruits, the writer has for many years contended that quality must be subordinate.

First, the staple fruit itself in some form—for the sight, for breeding new and hardier sorts from—for use in the kitchen, the children, for market; afterwards the delicate, amateur qualities, which, however, we would as far as possible and most gladly combine with the primer qualifications. *Too much stress can scarcely be laid on the choice of varieties;* and more can and will be made from orchards of those sure kinds, than millions of tender apple tree weeds, that freeze down the first hard winter.

Comparisons are odious, but to-day, for our planting almost anywhere in the North-west, we would go further and give more for seedlings of approved fruitful seedling trees, which tended to beget their kind, or trees grafted from such proved seedlings, yes more, fifty times over, than for all the Baldwins, Greenings and Spitzenbergs of Christendom.

If we had a subject to name for discussion in fruit-growing, it would be to ascertain, if possible, what was the *one* most reliable sort of apple, pear, plum, cherry, grape, &c., of which, if a man set out a tree or plant, there might be a reasonable prospect he would "thank God and take courage."

The writer feels that there are yet many most valuable varieties of fruit not "brought out," and doubtless away in some distant nook or corner of the State, may have been flourishing for these last ten years past, in modest and most fruitful worth; *seedlings* that will be better worth grafting for Wisconsin, than any imported variety whatsoever. Be it remembered, we do not urge indiscriminate propagation or planting of ordinary seedlings; but it is to *search among them* for superior sorts, adapted to Wisconsin soil and climate, even as we would hunt for gold or diamonds among pebbles.

On that account, all seedling orchards and nurseries are to us objects of interest; and so with experimenting from selected seed of hardy varietes—a most fruitful and neglected theme. And if we were to hunt and try a life-time in vain for something valuable in that direction, we should still know we had

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been on the right track, and where effort was usually sure of being rewarded.

There are to-day as great inventions to be made, as great fortunes in inventing them as ever—who doubts it, any more than the good old saw wherewith slighted swains and others console themselves—"as good fish in the sea as ever were caught!" So with fruit in its varieties and modes of manage ment; as great improvements in a thousand directions as were ever made, and for one, the writer would neither limit it, nor dare stop working and tinkering lest he might come short!

Who shall say how edible, as a dessert fruit, the glorious annual tomato may yet become? how perfect the system of dwarfing fruits may be made? Who shall set limits to the capacity and value of the blessed grape—the infant giant of modern Pomology? good enough, as all must admit, in every way and shape without crushing out its generous life-blood to intoxicate; nor need it then or thus, if *vitiated tastes* did not demand fermentation or drugging. Heaven forgive the parents or public who allow on every public corner or occasion, and in so many domestic circles, such unspeakably dangerous, cruel, foolish abuses of the Father's good gifts the only excuses for which, under the sun, are their existence and the power of habit—and so with every other evil.

We urge, then, the preservation of the hardiest varieties and best modes of cultivation to give us fruit; away with so much halting and half-heartedness about fruit-growing in the North-West! We maintain that wherever the cereals will grow, there the Creator intended man should grow and enjoy fruit, fresh from his own vine and fig-tree.

We have a warm right hand for every one that earnestly embarks in Horticulture, especially against popular prejudices; and we would labor with them for its sound, radical establishment in this great Western Valley—garden of the World. Let us get it founded aright—get something tangible and reliable to start with, and, if need be, fall back upon.

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REPORT OF COMMITTEE ON SEEDLINGS.

There was a fine display in this class, and much interest in competition. J. C. Brayton presented four varieties, viz:

No. 1.—Size, small to medium; yellowish; red cheek; mild sub-acid; season, early winter.

No. 2.—Yellow; russetty, carmine dots; medium to large; mild, sub-acid; firm, fine flesh, rather spicy; rapid grower.

No. 3.—Round, slightly flattened; ribbed greenish-yellow; striped and nearly covered with red; brisk sub-acid; winter.

No. 4.—Crab; about the size of Hislop; yellowish striped, and covered with red; mild acid, tender, juicy, nearly void of the peculiar astringent flavor of the Siberian; October.

No. 5.—By Wm. B. Stephens, Bradford, Rock County.—Round, oblong; resembling Autumn Strawberry in form and color; flesh yellowish; rather coarse-grained; pleasant acid or sub-acid; very large core; October.

No. 6.—By Geo. Snyder, Clinton, Rock County. Round; greenish-yellow; mild sub-acid; pleasant flavor; juicy (somewhat the *appearance* of the Lowell;) Sept., Oct.

No. 7.—Whitcher—By Mr. A. G. Hanford, Waukesha. Round, conical; greenish-yellow; nearly covered with dull red, with patches of brighter red, also with prominent russet dots; stem very short; cavity shallow; calyx, small closed; basin very shallow; core large; seeds long-pointed, numerous; strong upright grower; roots very freely; great annual bearer; Sept., Oct.

No. 8.—By Mr. Atwood, Lake Mills. Round, angular, one-sided; fine yellow; indistinct dots; stem long, projecting; calyx small, reflex segments; basin broad-ribbed; flesh, yellowish-white; fine grained; rich, sub-acid; nearly best.

No. 9.—By J. C. Plumb. Seedling of Fall Stripe. An imperfect specimen, passed for further examination.

No. 10.—Fuller's Seedling.—Committee unfavorably impressed with its quality. An imperfect specimen.

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The above examinations as full in detail as time would admit. All specimens examined that were presented, many of which were not worthy of notice.

J. C. BRAYTON,
A. G. HANFORD,
J. C. PLUMB.

RECEIPTS FOR MAKING RASPBERRY AND OTHER WINES.

Take good ripe berries, express and strain the juice; to each gallon of juice add three pounds good coffee sugar; stir well; put in jars or casks, and let stand, ferment and settle off; clear, then bottle if desired, or it may stand on the rack until used. All wines should be fermented in a cool cellar, where the temperature is quite even.

RHUBARB WINE.—As above, except four pounds of sugar instead of three.

CURRANT.—Same as above, except to each gallon of juice add one of water, and to the mixture three pounds of sugar.

STRAWBERRY.—Same as Raspberry.

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OFFICERS OF THE ASSOCIATION—1860.

President,	J. C. BRAYTON,	Aztalan.
Vice Presidents,	H. CROCKER,	Milwaukee,
	F. W. LOUDEN,	Janesville,
	JAMES JUDD,	Waupun.
Recording Secretary,	O. S. WILLEY,	Madison.
Corresponding Secretary,	A. G. HANFORD,	Waukesha.
Treasurer,	O. P. DOW,	Palmyra.
Executive Committee,	J. C. PLUMB,	Madison,
	H. A. CONGAR,	Whitewater,
	JAMES OZANE,	Racine.

NOTICE.

The Association was organized in December, 1858, for the "purpose of collecting, arranging and disseminating facts interesting to those engaged in the culture of Fruits,—and to embody for their use the result of practice and experiments of Fruit-Growers in all parts of the State." To a considerable degree these objects have been successfully carried out; the Association having held several exhibitions at which the products of the orchard, from all parts of the State, were bountifully spread, to the astonishment of every one who had doubted the possibility of successful Fruit-Culture in Wisconsin.

The severity and peculiarities of the past few seasons have sorely tried the faith of "tree planters," and now to know what varieties have passed through and are living examples of what others may be, is the great desire of all who are in any way interested in the final success of Fruit-Growing in the North-West.

The price of Annual Membership is one dollar; all persons interested in the worthy objects of the Association are earnestly solicited to unite with us for their advancement.

O. S. WILLEY, *Rec. Sec'y.*

Madison, Wis.

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WISCONSIN

AGRICULTURAL AND MECHANICAL ASSOCIATION.

[Condensed by the Editor from the Bulletin of the Association.]

This Association was incorporated by Chapter 96 of the Laws of the State of Wisconsin, passed on the 2d day of April, 1860. The objects of the Association, as defined by the Act of Incorporation, are the promotion of improvements in all the various departments of agriculture, including not only the great staples of industry and trade, but also fruits, vegetables, and ornamental gardening; the promotion of the mechanic arts in all their various branches; the improvement of the race of all useful domestic animals; the general advancement of rural economy and household manufactures, and the dissemination of useful knowledge upon those subjects. The first meeting of the corporators, who constituted the first Board of Directors, was held at the Newhall House, in the City of Milwaukee, on the evening of the 13th of June, when the Association was organized by the election of officers, as follows:

President—E. B. WOLCOTT; *Vice Presidents*—Alexander Mitchell, Milwaukee, Charles Dunn, Belmont, S. R. Cotton, Green Bay, David Noggle, Janesville, Richard Richardson, Racine, Otis Hoyt, Hudson, James H. Rogers, Milwaukee; *Secretary*—I. A. Lapham; *Treasurer*—Harrison Ludington.

A resolution was adopted authorizing the President to procure suitable subscription books, and forward one to each corporator, and to such other persons as he might deem proper, for the purpose of obtaining subscriptions to the capital stock of the Association, and fixing the price of each share at twenty-five dollars; the amount to be paid at the time of subscribing, twenty per cent., or five dollars on each share, and the remainder to be subject to call, upon thirty days' notice;

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but no more than twenty per cent. to be included in any one call.

At a meeting of the Directors, held at the same place on the 25th of July, the President reported that he had obtained, in Milwaukee, subscriptions to the capital stock to the amount of $16,350, (being 654 shares,) in sums varying from $50 to $1,000.

A Constitution, By-laws, and programme of operations were considered and adopted.

CONSTITUTION.

I. The Directors of this Association shall be elected by ballot, and the thirteen stockholders who receive the greatest number of votes cast, shall be considered duly elected, and shall hold their offices for one year, and until their successors are elected; each stockholder to have one vote for every share of stock held by him, which can be voted in person only.

II. The election of Directors by the stockholders shall be held in the City of Milwaukee, under the supervision of the Executive Committee, on Thursday of the week of the annual fair, at the office of said committee, between the hours of two and five o'clock in the afternoon; but the term of office of the Directors so elected shall not begin until the first day of the next January.

III. The Directors shall, as soon after the first day of January as convenient, elect a President, seven Vice Presidents, a Secretary, a Treasurer, and such other officers as they may think necessary, and prescribe their duties; the President and two of the Vice Presidents to be selected from the Directory.

IV. Stockholders shall be exempt from annual contributions, and shall have free access to the Fair Grounds, and the right to compete at all fairs and exhibitions of the Association with any stock or articles of which they may be the real owners.

V. Propositions to amend this constitution shall be submitted in writing at a meeting of the Directors, and if two-thirds of the members present at the next meeting vote for the same they shall be adopted; provided that notice of such proposed amendments be sent to each member of the Board prior to the time when the same are to be considered.

Messrs. E. B. Wolcott, *President*, Harrison Ludington, S. B. Davis, J. L. Burnham, T. C. Dousman, and F. D. McCarty, were appointed the Executive Committee.

A very favorable arrangement having been made for the use of sixty acres of land, with a suitable surface, already ornamented with native forest trees, and provided with a track one mile long, the Executive Committee were authorized to make the necessary arrangements for an Exhibition of Horses, as soon as it could be done.

Pursuant to this authority the Committee arranged for an Exhibition of Horses, to be held on Tuesday, October 2d, 1860, and the three succeeding days; premiums were offered amounting in the aggregate to over three thousand dollars.

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The grounds were fitted up in good style, with a track of the most approved form, one mile in circuit, a covered amphitheater for spectators, a convenient building for the Executive Office, and with one hundred good enclosed stalls.

The number of horses entered was 163, embracing many very fine animals, and affording gratifying evidence that the raising of fine horses has received much attention in Wisconsin.

The weather proved most unpropitious, heavy rains continuing through the first two days. The exhibition went on, however, and the several committees made the following

AWARDS OF PREMIUMS.

Class 1.—Thorough-bred Stallions.

Simon Ruble, Beloit, "Princeton," 1st premium,.....$ 150
J. V. Robbins, Madison, "Glencoe," 2d do. 75

Class 2.—Thorough-bred Mares.

Simon Ruble, Beloit, "Lady Victory," 1st premium,..... 80
N. B. Boyce, Janesville, "Prairie Bird," 2d do. 40

Class 8.—Roadster Stallions.

D. R. Brewer, Mukwonago, "David Hill," 1st premium,..... 150
D. W. Arnold, Waukegan, Illinois, "Black Weasel," 2d do..... 75
D. E. Brasted, Fond du Lac, "Ticonderoga," 3d do..... 35

Class 9.—Stallions for General Use, 8 years and over.

J. M. Learned, Janesville, "Membrino Rattler," 1st premium,..... 150
E. S. Snow, Fort Atkinson, "Fox Hunter," 2d do..... 75
D. S. Cady, Milwaukee, "Patrick Henry," 3d do..... 35

Class 10.—Stallions for General Use, five years and under eight.

H. W. McCafferty, Columbus, "Moscow," 1st premium,..... 100
S. B. Davis, Milwaukee, "Napoleon Third," 2d do. 50

Class 11.—Stallions four years old and under five.

J. Chester Cox, Summit, "Red Rover," 1st premium..... 70
Wm. L. Utley, of Racine, "Benicia Boy," 2d do..... 35

Class 12.—Stallions three years old and under four.

Edward M. Danforth, Summit, "Dick Messenger," 1st premium,..... 50
N. Potter, Sugar Creek, "Romeo," 2d do..... 25

Class 13.—Stallions two years old and under three.

George O. Tiffany, Greenfield, "Rainbow," 1st premium..... 40
W. J. Pixley, Delavan, "Robert Bruce," 2d do..... 20

Class 15.—Mares, with Foal by their side.

George O. Tiffany, Greenfield, "Lady Lightfoot," 1st premium,..... 60
Wm. H. Hiner, Fond du Lac, 2d do..... 30

Class 16.—Blood Mares.

A. Rorick, Wauwatosa, 1st premium,..... 50
J. L. Ault, Fond du Lac, 2d do..... 25

Class 17.—Fillies, four years old and under five.

J. C. Lewis, Fond du Lac, 1st premium..... 40
Wm. McEarly, Merton, "Flora," 2d do..... 20

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Class 18.—Fillies, three years old and under four.

Frederick Layton, Milwaukee, 1st premium..... 30
J. Chester Cox, Summit, "Belle of Waukesha," 2d do..... 15

Class 19.—Fillies, two years old and under three.

George O. Tiffany, Greenfield, "Bald Charlotte," 1st premium..... 20
T. C. Armstong, Milwaukee, Orange Kate," 2d do..... 10

Class 20.—Fillies, one year old and under two.

George McEarly, Merton, 1st premium..... 16
James Allen, Milwaukee, 2d do..... 8

Class 21.—Geldings, four years old and under five.

S. B. Davis, Milwaukee, "Barney Jr.," 1st premium..... 40
J. Olmsted, Milwaukee, "Boston Fred," 2d do..... 20

Class 22.—three years old and under four.

H. Curtis, Milwaukee, "Nip," 1st premium..... 30

Class 24.—Stallions, or Geldings, one year old and under two.

J. L. Ault, Fond du Lac, 1st premium..... 16
S. B. Davis, Milwaukee, "Snap," 2d do..... 8

Class 25.—Colts, under eight months.

A. H. Johnson, Milwaukee, 1st premium,..... 15
James Allen, Milwaukee, "Flora," 2d do..... 10

Class 26.—Matched Geldings or Mares, of sixteen hands and over.

J. C. Starkweather, Milwaukee, "Dan" and "Pete," 1st premium..... 100
J. F. Horton, Chicago, 2d do..... 50

Class 27.—Matched Geldings or Matched Mares, of fourteen hands and under sixteen.

A. J. Dean, Chicago, Ill.. 1st premium 100
A. Hyatt Smith, Janesville, 2d do..... 50

Class 28.—Roadsters, Matched Geldings or Mares.

G. Dutcher, Madison, "Dick" and "Harry,"..... 100
J. M. Learned, Janesville, 2d do..... 50

Class 29.—Trotting Roadsters in Double Harness, irrespective of size, color or sex; speed alone to be the test.

E. S. Higgins, Milwaukee, "Butcher Boy" and "Max;" 1st premium... 80
George W. Calkins, Merton, 2d do..... 40

Class 30.—Family Horses, Mares or Geldings, to be driven in Buggies.

J. M. Learned, Janesville, "Doctor," 1st premium..... 60
Samuel S. Johnson, Milwaukee, 2d do..... 30
George O. Tiffany, Greenfield, "Lady Bell Founder," 3d do..... 15

Class 31—Gentlemen's Driving Horses, Mares or Geldings, to Buggies.

G. W. Thustan, Waukesha, 1st premium..... 60
John Davis, Milwaukee, "Henry," 2d do..... 30
Walter Cook, Kenosha, 3d do..... 15

Class 32.—Single Roadsters, in Harness.

Duncan McDonald, Milwaukee, "Mack," 1st premium..... 50
J. L. Burnham, Milwaukee, "Sam Patch," 2d do..... 25

Class 33.—Gentlemen's Saddle Horses, Mares or Geldings.

John V. Robbins, Madison, "Jack," 1st premium..... 20
G. W. Thustan, Waukesha, "Jenny," 2d do..... 10

Class 34.—Ladies' Saddle Horses, Mares or Geldings.

William P. Lynde, Milwaukee, "Kitty," 1st premium,..... 20

Class 36.—Single Farm or Draft Horses, Mares or Geldings.

Philip J. Schlosser, Milwaukee, "Mike," 1st premium,..... 20
J. L. Burnham, Milwaukee, 2d do..... 10

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